ANNEX 25

(Item 3.1.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT -

PART 0 'INTEGRATED APPROACH PREREQUISITE FOR APPLYING PROVISIONS OF THE CODE ' – Doc: CED 46(27027)P

Name of the commenters	Abbreviation used
Shri Gopal Kumar S, Cape Electric Private Limited, Kancheepuram	CAPE

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
1	**CAPE**	**4.1**	design team, project management / construction management team, and operation and maintenance team are mentioned. Electrical installation need verification (inspection and testing) before hendover to user. This also to be added	It is important that leaders and members of design team, project management/construction management team, **inspection, testing and handing over team** and operation and maintenance team, depending on the size and complexity of the project, are carefully selected considering their qualification, experience and expertise in these fields.
2	**CAPE**	**4.1.4**	Verification (inspection and testing) is done by a different party to ensure that all the parties did their jobs properly and the building is in compliance with the relevant standard.	4.1.4 Inspection, Testing and Hendover Every Building Service (e.g. Electrical Service and connected equipment) shall be verified before handing over to the owner of the

			maintenance is after handing over	building. Verification includes inspection and testing based on the respective part of the code. Every electrical installation shall be verified, the defects shall be rectified, and the result of inspection and tests made there of shall be made available in the applicable test report formats (if available) as a prerequisite for the compliance of this code.
3	**CAPE**		Add a new clause and mover current 4.1.3 to 4.1.4	*4.1.3 Inspection, Testing and Handover*
4	**CAPE**		The approach in the IEC/ISO standards are design, erection and Verification especially for building services.	Every Building Service (e.g. Electrical Service and connected equipment) shall be verified before handing over to the owner of the building. Verification includes inspection and testing based on the respective part of the code.
5	**CAPE**		Verification (inspection and testing) is done by a different party to ensure that all the parties did their jobs properly and the building is in compliance with the relevant standard.	Every building service shall be verified, the defects shall be rectified, and the result of inspection and tests made there of shall be made available in the applicable test report formats (if available) as a prerequisite for the compliance of this code.

ANNEX 26
(Item 3.2.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT -
NATIONAL BUILDING CODE OF INDIA PART 2 ADMINISTRATION - DOC: CED 46 (26990) P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Dr S Senthilkumar, The Institution of Engineers (India), Kolkata

Further, the comments received are as follows: -

S. No.	Name of the commenters	Abbreviation used
1)	Dr U. S. Chhillar, Institution of Fire Engineers (India), New Delhi	IFE

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
1)	IFE	Clause 12.9	Also add Fire Protection Engineer.	*Fire protection engineer job as on date is taken up by other engineering streams people such as-HVAC Engineer Electrical Engineer and Plumbing "Engineers etc. In fact these engineers prepare documents based on their experience/knowledge of Fire Protection Engineers and the plans submitted by the team is to be scrutinized by the local fire Department, fire protection engineers for the NOC purpose.* *Qualifications for the Fire Protection*

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				engineers may be added as under:- 1. *B.E.Fire Engineering from National Fire Service College or equivaivalent with three years' experience* 2. *Advance Diploma in Fire Engineering from National fire Service College, Nagpur with Four years' experience.* 3. *Diploma in Fire Engineering from National Fire Service College, Nagpur with six years' experience.* 4. *Grade-I from IFE (India) /UK with four years' experience* 5. *M.I. from UK with three years' experience.*

ANNEX 27

(Item 3.3.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT -

PART 3 DEVELOPMENT CONTROL RULES AND GENERAL BUILDING REQUIREMENT- DOC: CED 46 (26991) P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Shri Senthilkumar Ganapathy, L&T Construction, Chennai

Further, the comments received are as follows:

S. No.	Name of the commenters	Abbreviation used
1)	Shri Hemant S. Vadalkar, The Institution of Engineers (India), Kolkata	IEI
2)	Shri Vivek B., Structural Engineers Association, Tamil Nadu	SEA
3)	Shri Saleem Kumar, Kerala Water Authority, Thiruvananthapuram	KWA
4)	Shri K. Dharshini, Indira Gandhi Centre for Atomic Research, Kalpakkam	IGCAR
5)	Dr U. S. Chhillar, Institution of Fire Engineers (India), New Delhi	IFE

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
1)	IEI	2.42A (Para 1)	Ground coverage : This is a very important parameter in the planning for keeping adequate open space, light and ventilation. Preferably ground coverage should be as minimum as possible. Extent of maximum permissible ground coverage like 5% to	Note : Maximum permissible ground coverage has been specified for various type of structures in Table ??

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			upper limit of 45% should be defined for various type of structres. This condition is missing from many development control regulations which needs to be incorporated. It is suggested that separate table indicating permissible ground coverage for each type of structure can be defined in this standard .	
2)		Clause 4.6 Note below e)	For smaller plots and having non-high rise and non-special buildings & Assembly buildings up to 300m^2 covered area the width of 6 m may not be possible and approach to at least 2 sides apart from the front entrance to road be made available.	The provision for approach of fire engine to the Non high rise and non-special buildings including assembly buildings up to 300m^2 should be from front side (One side) and for all other non-high rise buildings the approach should be from two sides. Rescue and firefighting operations can be carried out for whole of the buildings from two sides.
3)	IEI	12.9.2.2 (Para 1)	Extent of Basement and margin from plot boundary can be increased from 3m to 4.5m or more. Side margin of basement can be linked to the depth of basement. For deeper excavations more side margins are preferred. In Mumbai, basements are being planned with a margin of 1.5m from plot boundary. Shoring system in the form of concrete piles is provided along the plot boundary for deep excavations. This system needs space of 1m to 1.5m for installation of piles. So, virtually entire plot	The basements can be permitted below the ground and beyond the building lines at ground level subject to a clear minimum front margin of 6.0 m and side and rear margins of 4.5 m,.....

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			is excavated and concreted. There is no space for plantation, rain water percolation, routing various services for the building. Therefore, it will be advisable to have more margins for basement from plot boundary. Kindly consider this important aspect which is presently neglected in many projects. Fig 11 can be modified accordingly.	
4)	SEA	IS 1493	Compulsory unisex toilet required in all public buildings.	Incase a father carries his girl toddler, it may tough to enter into the ladies/gents toilets.
5)	KWA		Building safe location has to marked on national level. No building should block ways of rivers room for river.	To avoid further demolishing of buildings and avoiding loss of lives due to landslide and others.
6)	IGCAR	Accessibility in building and building environment	Suggesting to include sliding door / automated sliding door for accessible toilet.	When is wheelchair the door opening outwards/pulling inside will be difficult for manoeuvring. Providing sliding door will be much more easier for the wheel chair.

ANNEX 28

(Item 3.4.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT -

PART 4 'FIRE AND LIFE SAFETY' – Doc: CED 46(26992)P

Name of the commenters	Abbreviation used
Shri Gopal Kumar S, Cape Electric Private Limited, Kancheepuram	CAPE

	Basic Details	Clause/Subclause No.& Attachment	Paragraph No./Figure No./Table No.	Type of Comment	Comments/Suggestions along with Justification for the Proposed Change	Proposed Change/Modified Wordings
1	CAPE	3.4.6.3 N/A	5	Technical	*CO2/inert gas flooding system is not considered in IS/IEC 61439. A device which is not included in the standard can influence the technical requirement of the panel (e.g. clearance, creepage distance, insulation, IP. etc).* *Even if the panel is flooded with CO2, the panel catch fire after some time if the fault is not cleared.*	To be removed as it is against IS/IEC 61439-1
	CAPE	3.4.6.3.1 N/A	3	Technical	nitrogen injection system is not a system accepted in the standard. Hence to be removed. Equivalent IS standard is still under development. Refer CEA circular no	*All transformers where capacity exceeds 10 MVA shall be protected by high velocity water spray systems.*

	Basic Details	Clause/Subclause No.& Attachment	Paragraph No./Figure No./Table No.	Type of Comment	Comments/Suggestions along with Justification for the Proposed Change	Proposed Change/Modified Wordings
					CEA-PS-14-12/14/2023 PSETD division dt 04 - 06 - 2024	
	CAPE	3.4.6.3.1 N/A	3	Technical	nitrogen injection system is not a system accepted in the standard. Hence to be removed. Equivalent IS standard is still under development. Refer CEA circular no CEA-PS-14-12/14/2023 PSETD division dt 04 - 06 - 2024	*All transformers where capacity exceeds 10 MVA shall be protected by high velocity water spray systems.*
	CAPE	3.4.6.3.1 N/A	3	Technical	nitrogen injection system is not a system accepted in the standard. Hence to be removed. Equivalent IS standard is still under development. Refer CEA circular no CEA-PS-14-12/14/2023 PSETD division dt 04 - 06 - 2024	*All transformers where capacity exceeds 10 MVA shall be protected by high velocity water spray systems.*
	CAPE	2.12 --	1	Technical	Multiple comments on electrical installation are to be considered as attached as discussed with Shri Srinivas Valluri and Shri Krishnan Ananth.	multiple related to electrical system. see attached file

ANNEX 29

(Item 3.5.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT -

PART 5 'BUILDING MATERIALS' – Doc: CED 46(26776)P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Shri Indrajit Neog, Engineers India Limited, New Delhi
2) Dr S Senthilkumar, The Institution of Engineers (India), Kolkata
3) Shri Lalit R. Gabhane, National Safety Council, Navi Mumbai
4) Shri Saket Kumar Pandey, Directorate General Factory Advice Service and Labour Institutes, Mumbai
5) Shri Prashanth N, Hiranandani Company Construction Private Limited, Mumbai

Further, the comments received are as follows: -

S. No.	Name of the Commenters	Abbreviation Used
1)	Vijay Kumar Sharma, In Personal Capacity, New Delhi	VKS

Sl No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification for the Proposed Change
1)	VKS		The committee may like to consider, at least mentioning, use of new technologies like PPVC (Prefabricated Pre Finished Volumetric Construction) which has	

Sl No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification for the Proposed Change
			now matured and is being extensively used in section 5.	

ANNEX 30

(Item 3.6.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT –

PART 6 STRUCTURAL DESIGN SECTION 1 LOADS FORCES AND EFFECTS- DOC: CED 46 (26932) P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Shri Amitava Sil, Institute of Wood Science and Technology, Bengaluru

Further, the comments received are as follows: -

S. No.	Name of the commenters	Abbreviation used
1)	Shri Senthilkumar Ganapathy, L&T Construction, Chennai	L&T
2)	Dr A. K. Mittal, In Personal Capacity, Ghaziabad	AKM

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
1)	L&T	1.1	The imposed loads, wind loads, seismic forces, snow loads and other loads, which are specified herein, are minimum working loads which should be taken into consideration for purposes of design.	The specified imposed loads, wind loads, seismic forces, snow loads, and other loads are minimum working loads to be considered for design purposes.
2)	L&T	Cl 2.3	It is specified " If the weight is used to counteract uplift forces, calculations should assume the dry weight of soil and drainage layers". It shall be modified as "To counteract uplift forces roof	As Soil provided for roof gardening is not permanent (like to vary / replaceable on periodical basis).

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			gardening soil weight should not be considered"	
3)	AKM	Clause 4.7 Dynamic effects	It is proposed that the Time period calculated based on a rational method of analysis may be limited to a maximum value as calculated using the empirical formulas. It is observed that the time period calculated based on a rational method of analysis i.e using the commercial software, gives much higher value than using empirical method and also varies with the way structure stiffness is modeled. Moreover, many a times there is controversy between the designer and proof checker on this accounts. Larger time period leads to unnecessary larger wind forces.	
4)	L&T	6.3.4	Roofs shall be designed to preclude ponding instability. For flat roofs (or with a small slope), roof deflections caused by snow loads shall be investigated when determining the likelihood of ponding instability from rain-on-snow or from snow meltwater.	No criteria/reference regarding the determination of ponding stability.
5)	L&T	7.2.1.3	Request clarification on the temperature gradient assumptions for different materials.	Ensures accurate thermal stress calculations.
6)	L&T	List of Standards	6992 : 1973 Criteria for safety and design of structures subject to underground blasts	6992 : 1973 Criteria for safety and design of structures subject to underground blasts
7)	L&T	List of Standards 1 to 34	Code book Reference has been mentioned multiple times	For example consolidate all references to IS 875 into a single paragraph or point to avoid repetition.
8)	L&T	Table 50 Sl No-	Eelgrass, Glass fibre, Hair, Mineral wool unit	Values as per IS 875 (Part-1) Table-1

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
		1	weights are not matching as per Table-1 of IS:875(Part-1). Unit weight shall me modified inline with IS 875 (Part-1).	Eelgrass - 5.70 x 10^-3 to 7.65 x 10^-3 Kn Glass fibre - 3.80 x 10^-3 kN Hair - 19.10 x 10^-3 kN Mineral wool - 13.45 x 10^-3 kN
9)	L&T	Q-8.1.2.1, Tabel 64 & 65	Dynamic Increase Factors	More detailed correlation of dynamic increase factor for yield stresses of material based on the the strain rate achieved during dynamic loading shall be incorporated with graphical representation.
10)	L&T	Q-8.3.1.6	For elasto-plastic design of fixed slabs, the modified value of kEis to be worked out in accordance with Fig. 53B using the stiffness values of slab in elastic and elasto-plastic cases as given in Table 72 and KLM**KLM** is to be suitably chosen depending upon the ductility factor.	For elasto-plastic design of fixed slabs, the modified value of kEis to be worked out in accordance with Fig. 53B using the stiffness values of slab in elastic and elasto-plastic cases as given in Table 72 and **KLM** is to be suitably chosen depending upon the ductility factor.

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ANNEX 31

(Item 3.7.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT –

PART 6 'STRUCTURAL DESIGN SECTION 2 SOILS AND FOUNDATIONS'- Doc: CED 46 (26840) P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Shri Indrajit Neog, Engineers India Limited, New Delhi
2) Dr S Senthilkumar, The Institution of Engineers (India), Kolkata
3) Shri Manokar S., Fujitec India Private Limited, Gurugram
4) Shri RC Sharma, In Personal Capacity, New Delhi
5) Shri Prashanth N., Hiranandani Company Construction Private Limited, Mumbai

Further, the comments received are as follows: -

S. No.	Name of the commenters	Abbreviation used
1)	Shri Senthilkumar Ganapathy, L&T Construction, Chennai	LTC
2)	Shri Aman Deep, Creative Design Consultants and Engineers Private Limited, Ghaziabad	CDCE
3)	Dr K. K. Babu	KKB

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
1)	LTC	3.4.1	It is recommended to use instruments such as accelerometers and strain gauges to measure the energy transferred to the drill pipe during hammering. Before starting the Standard Penetration Test (SPT), each rig should be calibrated with instrumentation and operated with known energy efficiency.	In India, substrata analysis primarily relies on the SPT N-value. It is crucial to include in the National Building Code (NBC) the requirement for measuring the energy transferred to the drill pipe during hammering. Using accelerometers and strain gauges helps account for hammer efficiency variations, ensuring accurate and reliable SPT results for energy ratio correction.
2)	LTC	3.5.7	Test requirements for chemical analysis of subsoil have been provided. Kindly include the permissible limits for the listed chemical and organic content in the soil.	No Indian code currently specifies permissible limits for organic or listed chemical content in soil. IS 456 provides guidelines only for water quality in this regard. Please advise on the necessary precautions if the permissible limits for organic or chemical content are exceeded in soil.
3)	CDCE	6.11	adding a clause for deep Excavations requiring shoring…. Clause 6.11 : Protection of Excavation and Shoring Clause 6.11.4 Shoring To support the excavation sides when open excavation is required for depth more than 2.0m and excavation in safe slopes is not feasible, Shoring shall be provided to protect the excavation, to allow almost vertical soil-cutting/ excavation. The shoring	

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			protection for excavation sides can be designed with Concrete shoring Piles walls (Secant wall or tangent wall system), Soldier pile wall, diaphragm wall etc. as per the soil conditions, depth of excavation and chosen technology/ system. This temporary shoring is generally defined as shoring which is anticipated to be in service for not more than 12-month period. Earth retention structures that are anticipated to be in service for more than 12 months should be designed as permanent structures. **For Temporary Shoring**, basic design guidelines may be considered as below: Load of soil pressure as applicable shall be considered and the Shoring Pile system (Piles including Soil Anchors if provided) shall be designed to take the loads under service load conditions safely. For the load calculations, Active earth pressure or At-Rest Earth Pressure shall be considered as below: • *Active Earth Pressure*: For cantilever walls and **flexible walls** with only one row of tiebacks/braces (i.e., flexible anchored bulkheads) • *At-Rest Earth Pressure*: For **rigid walls** (e.g., reinforced concrete walls) that deflect less than that indicated below: **Type of backfill** **Wall Deflection/ Wall Height** Dense	

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			Sand 0.001 Medium dense Sand/Silt 0.002 **For Permanent conditions**, Final loads including for surcharge with required Load factor shall be resisted by the permanent structural walls. The coefficients of earth pressure, for this stage conditions shall be considered as *At-Rest* conditions only. The structural safety calculations should satisfy to: • Verify deflection is within the allowable limits • Verify strength of structural elements are not exceeded	
4)	LTC	7.2.3	Detailed discussions and brainstorming are needed to finalize the decision on this.	The permissible differential settlements and tilt (angular distortion) for shallow foundations in soils, as outlined in Clause 7.2.3, differ from those specified in IS 1904:1986. For example, IS 1904 specifies a maximum settlement of 60mm for isolated foundations of reinforced concrete structures, while NBC mentions 75mm. Kindly verify and confirm which guideline should be followed.
5)	LTC	7.2.4	Estimation of the safe bearing pressures of rocks for shallow foundations based on strength, allowable settlement and classification criteria; and also design and construction of shallow foundations on rocks shall be carried out in accordance with the good practice [6-2(15)] and [6-2(4)].	The reference code mentioned (8009 Part 1) for shallow foundations on rock, in accordance with good practice, is not relevant. Kindly review and update it to the applicable reference codes (IS 12070 and IS 13365 Part 1).

<table>
<tr><th>S. No.</th><th>Name of the commenter</th><th>Clause /Sub-clause / Para No.</th><th>Comments/ Suggestions/ Modified words</th><th>Justification of the Proposed Change</th></tr>
<tr><td>6)</td><td>LTC</td><td>7.2.4</td><td>Rock Mass Rating (RMR) - May also be used to give net allowable pressure as per Table. This will ensure settlement of raft foundation up to 6 m thickness to be less than 12 mm.

NET SAFE BEARING PRESSURES BASED ON RMR
<table>
<tr><td>Classification no</td><td>I</td><td>II</td><td>III</td><td>IV</td><td>V</td></tr>
<tr><td>Description of rock</td><td>Very good</td><td>good</td><td>fair</td><td>poor</td><td>Very poor</td></tr>
<tr><td>RMR</td><td>100-81</td><td>80-61</td><td>60-41</td><td>40-21</td><td>20-0</td></tr>
<tr><td>q_{ns} (t/m^2)</td><td>600-448</td><td>440-288</td><td>280-141</td><td>135-48</td><td>45-30</td></tr>
</table></td><td>Table 3 in IS 12070:1987 was updated in Amendment No. 1, which designers may overlook. It is requested to incorporate this update into the (NBC) code.</td></tr>
<tr><td>7)</td><td>LTC</td><td>7.5</td><td>For provisions regarding ring foundations, good practice [6-2(17)] shall be referred to.</td><td>It is mentioned that good practice [6-2(16)] shall be referred to; however, this reference provides information about shallow foundations other than raft and shell foundations. Kindly refer to IS 11089:1984 for the relevant guidelines regarding ring foundations.</td></tr>
<tr><td>8)</td><td>LTC</td><td>7.6</td><td>For provisions regarding shell foundations, good practice [6-2(18)] shall be referred to.</td><td>It is mentioned that good practice [6-2(17)] shall be referred to; however, this reference provides information about the design and construction of ring foundations. Kindly refer to IS 9456:1980 for the relevant guidelines on shell foundations.</td></tr>
<tr><td>9)</td><td>LTC</td><td>8.2.3.2</td><td>When working near existing structures, care shall be taken to avoid damage to such structures. The good</td><td>Please check and update the reference standard mentioned, as it does not</td></tr>
</table>

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			practice [6-2(19)] may be used as a guide for studying qualitatively the effect of vibration on persons and structures.	address vibration and the influence on adjacent structures.
10)	LTC	8.2.3.3	Pile capacity should preferably be confirmed by initial load tests [see good practice [6-2(20)]. For rock-socketed piles, reference shall also be made to good practice [6-2(21)] for estimating the load capacity of piles.	Please correct the reference for initial pile load tests to 6-2(20) on page 50, as it currently appears as 6-2(19) in the draft report. Additionally, the code referenced for rock-socketed piles is inconsistent; please verify and update accordingly.
11)	LTC	8.2.3.3.1.1	The two separate static formulae, commonly applicable for cohesive and non-cohesive soil respectively, are indicated in Annex G. Other formula based on static cone penetration test [see the accepted standards {6-2(22)}] and standard penetration test [see the accepted standard {6-2(13)}] are given in G-3 and G-4	Please correct the reference for the static formula for clay and sand to ANNEX G, as it is currently mentioned as ANNEX H in the draft. ANNEX H is designated for laterally loaded piles.
12)	LTC	8.2.3.3.1.3	The ultimate load capacity of a single pile is determined with reasonable accuracy from test loading as per good practice [6-2(20)]. The load test on a pile shall not be carried out earlier than four weeks from the time of casting the pile	Please update the reference for load tests to 6-2(20), as the current reference (2974 Part 1) pertains to machine foundations
13)	LTC	8.2.3.5.2.1	Detailed discussions, comparisons with international standards and brainstorming are needed to finalize the decision on this	IS 2911 Part 4, clause 8.4.1, highlights the importance of interpreting free head to fixed head test capacity. Please include this importance in the NBC and suggest some analytical methods for accurate assessment.
14)	LTC	8.2.5	Design and construction of bored cast in-situ piles founded on rocks shall be carried out in accordance with good practice [6-2(21)].	Please update the reference for bored cast in-situ piles on rock from 6-2(20), which refers to 2911 (Part 4): 2013, to 6-

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				2(21), which is IS 14593:1998.
15)	LTC	8.2.6	Generally, as an industry practice, 75% of the piles should be tested using the Low Strain Pile Integrity Test, while the remaining 25% should be tested with the Cross-Hole Sonic Logging (CHSL) test. In cases where discrepancies are encountered in pile load test results, these should be further substantiated with the High Strain Pile Integrity Test, as it provides detailed information on both skin friction and end bearing separately.	The reference provided for non-destructive testing on piles only includes general guidelines. Please specify the required percentage of piles to be tested using Low Strain PIT and CHS tests, as well as the percentage for High Strain PIT where it is recommended.
16)	LTC	8.3.2.6	n = efficiency of the blow (see 8.3.2.6.1 for probable value of n).	Please update the reference for the efficiency of the blow to 8.3.2.6.1, as the current reference (9.2.6.1) does not address efficiency.
17)	LTC	8.3.2.6	The Hiley formula is $R = Wh\eta / (S + C/2)$ Where, R is the ultimate driving resistance in kN W is the weight of the ram in kN.	Please incorporate the formula to calculate Driving Resistance, as it is currently missing in the draft.
18)	LTC	8.3.5.2	Detailed discussions, analysis and brainstorming are needed to finalize the decision on this.	It is understood that Annex H is taken from IS 2911. For granular material, the Modulus of Subgrade Reaction is currently interpolated only within the SPT range of 0-35. Similarly, for clay, UCS values are available only in the range of 25 to 400 kPa. What is the approach for SPT values greater than 35 and UCS values greater than 400 kPa? Is linear

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				interpolation allowed beyond these ranges, following the same trend? If not, please include a note stating that values above these limits must be numerically validated and designed.
19)	LTC	8.4.3	Kindly check and update	Please verify and update the reference for handling stresses, as 9.2.5 does not exist in the document.
20)	LTC	8.5.3.2	Safe load on a pile can be determined, a) by calculating the ultimate load from soil properties and applying a suitable factor of safety as given in Annex J. b) by load test on pile as good practice [6-2(20)]; and c) from safe load tables.	Please update the reference for under-reamed piles load test from 6-2(19), which is not applicable for load tests, to 6-2(20). Additionally, kindly verify and update all other relevant sections accordingly.
21)	LTC	8.5.2	Provisions of 8.2.2 shall generally apply.	Please update the reference for materials from 8.1.2, which does not exist in the draft, to 8.2.2 for the correct reference.
22)	LTC	9	Detailed discussions and brainstorming are needed to finalize the decision on this.	While the general outline for CPRF is provided, please include more specific detailed design guidelines along with the relevant references for design and construction of CPRF.
23)	LTC	12	Detailed discussions, comparisons with international standards and brainstorming are needed to finalize the decision on this.	The instrumentation section currently provided is general. Please specify the importance of instrumented piles and kindly recommend frequency of testing in percentage.
24)	LTC	12	Settlement markers should be installed at the four corners and center to monitor differential settlement,	Raft foundations are susceptible to differential settlement over time.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			enabling informed decisions and timely precautionary actions.	Considering this, please incorporate instrumentation for settlement monitoring to track these variations.
25)	LTC	12	Detailed discussions, comparisons with international standards like LTA and brainstorming is needed to finalize the decision on this.	Please provide guidelines for the basement excavation retaining system, including the monitoring array, frequency of monitoring, and review levels. Example: 1. Monitoring arrays for supported excavations 2. Monitoring arrays for unsupported (open) excavations 3. Monitoring zones for buildings and structures 4. Monitoring zones for utilities 5. Arrangement of strain gauges for struts, ground anchors and nails
26)	KKB		Scope of Geotechnical investigation infrastructure projects is to be included in an elaborate manner.	

ANNEX 32

(Item 3.8.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT –

PART 6 STRUCTURAL DESIGN SECTION 3 TIMBER AND BAMBOO: 3A TIMBER'- DOC: CED 46 (26944) P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Dr S Senthilkumar, The Institution of Engineers (India), Kolkata
2) Shri Prashanth N, Hiranandani Company Construction Private Limited, Mumbai

Further, the comments received are as follows: -

S. No.	Name of the commenters	Abbreviation used
1)	Shri Amitava Sil, Institute of Wood Science and Technology, Bengaluru	IWST

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
1)	IWST	Clause 11.2.5, Table 3	There two pont, three point, four point loading in Static bending test.	Third Point Loading to be changed as Three Point Loading in Table 19

ANNEX 33

(Item 3.9.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT –

PART 6 'STRUCTURAL DESIGN SECTION 3 TIMBER AND BAMBOO: 3B BAMBOO' - DOC: CED 46 (26947) P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Dr S Senthilkumar, The Institution of Engineers (India), Kolkata
2) Shri Amitava Sil, Institute of Wood Science and Technology, Bengaluru
3) Shri Manokar S., Fujitec India Private Limited, Gurugram

Further, the comments received are as follows: -

S. No.	Name of the commenters	Abbreviation used
1)	Shri Prashanth N, Hiranandani Company Construction Private Limited, Mumbai	HCCPL

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
1)	HCCPL	4.5.2.3 Paragraph No. 4	In Broucherie Process , some of the details to be added such as 1. Methodology to be followed. 2. Chemicals to be used along with ratio. 3. Time span required for the process	Will be more useful

ANNEX 34

(Item 3.10.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT –

PART 6 'STRUCTURAL DESIGN SECTION 4 MASONRY' - DOC: CED 46 (26653) P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Shri V. Manjunath, UL Standards & Engagement Inc., Bengaluru
2) Dr S Senthilkumar, The Institution of Engineers (India), Kolkata

Further, the comments received are as follows: -

S. No.	Name of the commenters	Abbreviation used
1)	Shri Senthilkumar Ganapathy, L&T Construction, Chennai	LTC
2)	Shri Prakash Sangamnerkar, Madhya Pradesh Housing and Infrastructure Development Board, Bhopal	MPHIDB

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
1)	MPHIDB	3.3.2, Table 2 NOTES	1.Sand for making mortar should be well graded. In case sand is not well graded, its	One more point can be added mentioning about the use of Manufactured sand, i.e. use

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			proportions shall be reduced in order to achieve the minimum specified strength.	of manufactured sand is permitted or not permitted for making cement mortar in order to achieve the minimum specified strength.
2)	LTC	Cl 5.2.1	The design loads and the other forces to be taken for the design of masonry structures may be described as loads wise (e.g. dead, live, seismic, wind, etc.) and for each corresponding load relevant clause can be shown for better reference.	To reduce time and effort for reference. The design loads and the other forces to be taken for the design of masonry structures may be described as loads wise (e.g. dead, live, seismic, wind, etc.) and for each corresponding load relevant clause can be shown for better reference.
3)	LTC	5.5.5	Additional details regarding connection requirements of millions and transoms shall be included for proper detailing.	In framed buildings, partition walls are typically constructed between non-structural mullions and transoms, which are connected to the beams and columns of the building. Mullions are subjected to load transfer when connected to the soffit of the beam. In the case of transoms, they play a role during seismic events. Generally, no specific guidelines or standards are available for detailing these connections. Improper detailing may change the structural behaviour.
4)	LTC	10.4.4.1	Procedure for design of walls subjected to out-of-plane bending and for beams as a part of wall subjected to bending in the plane of the wall shall be added. Also shear design shall be covered	Relevant annexure may be referred.
5)	LTC	10.4.4.2	Design of columns for Biaxial bending moment and axial load shall be included. Or reference to annexure shall be included. Also shear design shall be covered.	Relevant annexure may be referred.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
6)	LTC	D-3	In framed buildings, minimum and maximum spacing shall be included. And construction methodology shall be included.	
7)	LTC	D-3.1	It is mentioned that “These are internal walls usually subjected to much smaller lateral forces. Behaviour of such wall is similar to that of panel wall, and these could, therefore, be designed on similar lines.” However, these walls will be subjected to out of plane seismic force. Collapse of such wall may be detrimental to the occupants. So provision to include the same shall be included. So sentence may be suitably modified.	
8)	LTC	ANNEX-E	In Annex E uniaxial bending with axial force is covered. However, considerations for biaxial bending moment along with axial force in terms of interaction is not specified.	Design provisions for Biaxial bending with axial force shall be included for column and wall design.
9)	LTC	FIG 1	Abbreviations for “tw” to be added.	For better Clarity and Understanding
10)	LTC	FIG 22	Symbol “t” for Wall thickness not consistently followed.	For better clarity and understanding Symbol “t” for Wall thickness not consistently followed.
11)	LTC	FIG 49B	“Plane Wall” marked may be removed.	“Plane Wall” marked may be removed. It is only confined masonry panel as marked on the other side.
12)	LTC	FIG 58	Slab bar connectivity is not properly shown	For better Clarity and Understanding

ANNEX 35

(Item 3.12.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT –

PART 6 'STRUCTURAL DESIGN SECTION 6 STEEL AND COMPOSITE CONSTRUCTION:

6B COMPOSITE CONSTRUCTION IN STRUCTURAL STEEL AND CONCRETE' - DOC: CED 46 (26396) P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Shri Shirish Bhatt, Greenlam Industries, Kolkata
2) Smt Indu Siva Ranjani Gandhi, Indian Institute of Technology Guwahati, Guwahati
3) Shri Nitin Vaze, Sleek Boards Marketing Services LLP, Pune
4) Dr P R Kanna Rajumar, The Institution of Engineers (India), Kolkata
5) Dr S Senthilkumar, The Institution of Engineers (India), Kolkata
6) Shri Saket Kumar Pandey, Directorate General Factory Advice Service and Labour Institutes, Mumbai

Further, the comments received are as follows: -

S. No.	Name of the commenters	Abbreviation used
1)	Shri Vaibhav Singhal, Indian Institute of Technology Patna, Patna	IITP
2)	Shri Senthilkumar Ganapathy, L&T Construction, Chennai	LTC

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
1)	LTC	Cl.5.3.2 (b) Standard Concrete - This type comprises of concrete grades from M25 to M50.	Sentence shall be modified as " Standard Concrete - This type comprises of concrete grades from M25 to M55".	Reference Table-2 of IS 456-2000
2)	LTC	5.3.3 Table 1	i) Density Range (kg/m3) ii) Design Density(kg/m3) Plain concrete/Reinforced Concrete	First two rows of the table are mentioned as “Density (kg/m3)”. Same can be modified with relevant terminology as given in proposed Change.
3)	LTC	6.1.4	It is mentioned that “Effects of support deformation may be considered, where significant, as given in [6-6B(5)].” However, there is no provisions for support deformation is given in [6-6B(5)].	Reference can be modified with relevant code.
4)	LTC	6.1.6	Ratio Pd/Pcr to be modified to Pcr/pd. Modified Wordings: “The second-order analysis should include the imperfections in the modelling, if the ratio of the elastic critical load to the factored design loads, Pcr/Pd < 4.0. If the second-order analysis does not include the imperfection effects (when Pcr/Pd ≥4.0), the design method used should consider the imperfection effects. If the second-order analysis includes imperfection modelling, then the design method shall not include the effects of imperfections.”	It is mentioned that “The second-order analysis should include the imperfections in the modelling, if the ratio of the factored design loads to the elastic critical load, Pd/Pcr < 4.0. If the second-order analysis does not include the imperfection effects (when Pd/Pcr ≥4.0), the design method used should consider the imperfection effects. If the second-order analysis includes imperfection modelling, then the design method shall not include the effects of imperfections.”, Factored design loads pd cannot be 4

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				times greater than elastic critical load pcr).
5)	LTC	7.5 Table 7	Partial safety factor for accidental load combinations shall be provided for i) Reinforcement ii) Shear connectors and iii) Connections	Partial safety factor for accidental load combinations is missing for i) Reinforcement ii) Shear connectors and iii) Connections For Example, AERB/SS/CSE-1 Table 3.2 suggests Partial safety factor 1.0 for Reinforcement under accidental load combinations.
6)	LTC	8.3.2	Provisions for treaded and Grout couplers in achieving the continuity of reinforcement shall be provided.	It is mentioned that “The standard methods applicable for achieving continuity of reinforcements are lapping and butt welding of bars” For faster construction, Couplers are employed, and at the same time butt welding of bars are difficult to achieve. Accordingly sentence can be rephrased.
7)	LTC	Cl: 8.3.3 (b)	The equation of βe1 & βe2 shall be limited to 1.0. Equation 5.5 of EN-1994-1-1	The equation of βe1 & βe2 shall be limited to 1.0.
8)	LTC	8.3.6.1	It is mentioned that “Ym0 = partial safety factor against shear failure (Table 7)” Sentence may be rephrased as Ym0 = partial safety factor as mentioned in Table 7	
9)	LTC	Cl 9.3	In determining the modular ratio, creep factor is provided. The creep factor (Kc) is mentioned as 0.5, a constant value.	Creep coefficient generally dependent on age of loading based on on Cl 5.4.2.2 of EN 1994-1-1-2004 and Cl 6.2.5.1 of IS

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				456-2000. Therefore creep coefficient shall be updated suitably.
10)	LTC	9.3.2.1	It is mentioned as “Deflections are to be checked for the most adverse but realistic combination of service loads and their arrangements by elastic analysis using a load factor given Table 7” Table 7 presents the provisions for partial safety factor for material and not relevant for Load Factor.	Relevant Reference shall be given.
11)	LTC	9.4	Provisions for classifying the structural system based on frequency can be included.	It is mentioned that “Unusually flexible structures (generally the height to the effective width of lateral load resistance system exceeding 5:1) shall be investigated for lateral vibration under dynamic wind loads.” Provisions for classifying the structural system based on frequency can be appropriate for wind loading, As per IS 875 Part-3 the structure can be flexible when Frequency of the system is less than 1Hz.
12)	LTC	9.7	Para can be rephrased.	It is mentioned that “Minimum reinforcement in terms of diameter and spacing required for crack control at the top of concrete as per [6-6B(4)]”. However, these provisions are not addressed in IS 456-2000. Also crack width calculations given in IS 456-2000 may not be applicable for

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				Composite sections.
13)	LTC	Cl 12.6.2	The span to depth ratio in range of 25 to 35 for the limited to pressure of 3 kPa and span upto 3.5m. Cl 24.1 of IS 456-2000	To validate actual deflection, the permissible limit is required. The load range limit in which the span to depth ratio is valid, shall be specified.
14)	LTC	Cl 13	S. No of Composite columns is mentioned as 12 same shall be updated as 13.	S. No of Composite columns shall be updated as 13.
15)	LTC	13.8.2	Provisions related to determination of □ as provided in IS 456-2000 may included.	When Members subjected to axial force and Bi-axial Bending, 3D interaction chart can be used. Interaction will be checked based on a as per Bresler Load Contour Method or based on calculating the inclined neutral axis corresponding to resultant bending moment orientation. Provisions related to determination of a is provided in IS 456-2000 and other internation al standards.
16)	LTC	Fig 21	Shear connector -Headed studs and channel studs are provided. Additional type “stirrups through the web” may be included Fig 6.10 (3) of EN 1994-1-1-2004	Stirrups through web type may be suggest in the code.
17)	LTC	C-4.1	Provisions for using Rectangular stress block shall be given to simplify the calculation.	Since Neutral axis is to be evaluated by trail and error approach, Rectangular stress block approach can simplify the Bending resistance estimation.
18)	LTC	Annex-D Table-25	Equations corresponding to Major axis bending is addressed, however equations for Minor axis bending is missing.	Equations given in Table-25 can be generalised to suit both major and minor axis bending.
19)	LTC	D-3	Provisions to find the Tensile capacity of the column	In the design of column there may be

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			and same can be included in interaction chart.	cases column may be subjected to axial tension and bending moment.
20)	LTC	Annex D D.3	In Table 25 a) & b) mentioned as major axis bending In Table 25 b) shall be minor axis bending	
21)	LTC	D-4	Provisions for Biaxial bending with axial tension can be included in the interaction.	When column is subjected to axial tension. Ratio of actual tension load and capacity may be included in the interaction equation if required.
22)	IITP	E 1.3 c)	Addition of rate of loading.	If possible the rate of application of load may be included for more uniform test results.
23)	LTC	General	This part of NBC addresses composite construction in structural steel and concrete However, design provisions for the following may be addressed in this code. • Design of composite section with precast RC girder and RC slab • Design of composite section with precast PSC girder and RC/ PSC slab.	Pre-casting techniques are being used in all the areas for fast-track construction. Hence same can be included. Provisions for the same is given in IRC: 22-1986 (Standard specifications and code of practice for Road bridges section vi) Composite construction)

ANNEX 36

(Item 3.15.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT –

PART 7 'CONSTRUCTION MANAGEMENT PRACTICES AND SAFETY'- DOC: CED 46 (26876) P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Shri Lalit R. Gabhane, National Safety Council, Navi Mumbai

Further, the comments received are as follows: -

S. No.	Name of the commenters	Abbreviation used
1)	Shri Senthilkumar Ganapathy, L&T Construction, Chennai	LTC
2)	Prashanth N, Hiranandani Group of companies	HGC
3)	Debdas Goswami, Schneider Electric India Private Limited, Gurugram	SEI

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
1)	SEI	5.2.2.2	Add details about BIM and LOD for better understanding.	
2)	SEI	P/48-2.6 of Table 1	In col. (1): Why only Alarm system, more important and critical to add are: 1) Electrical installation 2) Energy efficiency and management 3) Lighting 4) Emergency system	

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			In col (6): Not sure what it means, but Electrical design consultant should have been mentioned	
3)	HGC	Page No-59 Category Description V. Design, constructability reviews & coordination 5.4 Site Safety Review (in Table 1)	5.4 Site Safety Review (Table-Equipment) In construction industry at site the equipment's that is **Digital sign board**, statistics boards can be used to visualize understanding workers.	• Easy view or visualization of safety statistics and safety signage's at site. • Printing of signage's can be minimized. • Paper use may save. To analyze data like safe man hours, near miss, incidents ,etc.
4)	SEI	P/62-6.2 of Table 1	In col. (1): Add 6.3-Electrical installation drawing	
5)	HGC	Page No- 71 6 PERMIT TO WORK SYSTEM 6.2 Scope of Application	In Dynamic environment across construction industry, Managing work permit can be challenging. **Digital permit to work** features simplifies this process, ensuring efficiency and safety for all involved parties. Requester – Initiates a work permit request. Issuer – Verifies and forwards the request Reviewer – Evaluates the request. Approver – Gives the final approval. Super Admin – The entire process is visible to the super admin for transparency and control	• Reduced the manual effort of managing safety issues and work permits by managing your processes. • Report safety issues and work permit within a few clicks using the mobile app. • Use dashboard and tickets page to filter data by site, time period, issue category and status for in-depth analysis.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				• Keep user informed about updates. • Manage near misses, Unsafe acts, Unsafe conditions, Incident reporting, asset maintenance, training modules and permits all in one platform. • Digital PTW Aids Permit to work process by Automatic closing of PTW when job is done, Extend work permit as needed, Permit can be edited at every stage, Permit can be rejected or cancelled by issuer, reviewer or approver if standards are not maintained, Tag work permits to safety issues like near misses, observation or incidents, Keep the entire history of work permit in one place.
6)	HGC	Page No.-74, 198 6.5.4 Emergency Procedures 16.8 First Aid and Medical	A first-aid center at a building demolition site is an essential facility set up to provide immediate medical care for minor injuries and emergencies. Due to the high-risk nature of demolition work—where hazards such as sharp objects, heavy machinery, and falling debris are present—a dedicated first-aid center helps ensure rapid treatment and minimizes injury severity.	**Immediate Medical Response**: Ensures rapid treatment of minor injuries (e.g., cuts, sprains, eye irritations), preventing them from worsening and allowing injured workers to resume duties safely. **Reduced Injury Severity**: Prompt first-aid care can reduce the severity of injuries, especially for high-risk tasks associated with demolition work, such as handling heavy machinery or exposure to hazardous materials.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
		Facilities Medical First Aid Center		**Trained Medical Assistance**: Having a qualified male nurse on-site ensures that skilled medical support is available for more complex injuries, stabilizing injured individuals until further medical help arrives if necessary. **Increased Worker Safety and Confidence**: Knowing that immediate medical assistance is on-site reassures workers and encourages a safer approach to tasks, fostering a positive safety culture. **Regulatory Compliance**: Many safety regulations require accessible first-aid facilities on high-risk sites, ensuring legal compliance and avoiding potential fines. **Enhanced Emergency Preparedness**: An on-site first-aid center with a nurse facilitates better emergency response and quick coordination with external medical services if evacuation is needed.
7)	HGC	Page No.-77 7.3.2.1 Site layout	Fencing at a building demolition site is a critical safety measure used to secure the perimeter and protect the public, workers, and surrounding property from potential hazards. This temporary barrier serves multiple purposes, helping to manage	**Public Safety:** Protects pedestrians from debris, dust, and equipment movement, especially in busy areas. **Enhanced Site Security:** Deters theft,

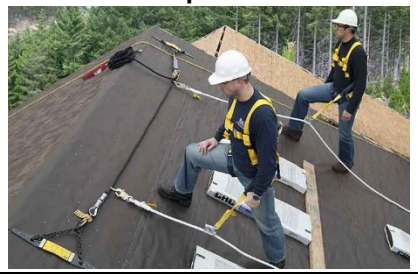
S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
		Fencing	risks associated with demolition activities. Fencing at a building demolition site plays a crucial role in enhancing safety and environmental protection by serving multiple functions.	vandalism, and damage to equipment or materials on-site. **Clear Demarcation:** Provides a visible boundary, indicating that the area is a construction zone with potential hazards. **Dust Suppression**: Specialized fencing, often made from mesh or solid materials, helps to contain dust generated during demolition activities, reducing airborne particles and minimizing air pollution on and around the site. **Noise Control**: Fencing can help reduce the noise impact on surrounding areas by acting as a sound barrier, thus mitigating disturbances to nearby residents, businesses, or public spaces. **Restricting Unauthorized Entry**: The fencing acts as a physical barrier to prevent unauthorized access to the demolition site, ensuring that only trained personnel and authorized individuals are allowed near hazardous areas. Overall, fencing at demolition sites is a vital safety feature that protects the public, reduces environmental impact,

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				and ensures compliance with regulatory standards.
8)	HGC	Page No.-78 7.4.3 Emergency Response Plan Development Emergency Assembly Point	An Emergency Assembly Point (EAP) at a demolition site is a designated safe location where workers and site personnel gather in the event of an emergency, such as a fire, structural collapse, or hazardous material spill. This point is strategically chosen to be far enough from potential hazards but easily accessible from various parts of the site.	**Quick Accountability**: Allows supervisors to quickly account for all personnel, ensuring no one is left in hazardous areas during an emergency. **Improved Safety and Organization**: Provides a clear, safe location for workers to gather, reducing confusion and ensuring an orderly evacuation process. **Reduced Risk of Injury**: Prevents workers from gathering near active demolition zones or other unsafe areas, minimizing the chance of injury. **Efficient Emergency Response**: Facilitates communication with emergency responders by providing a known gathering point where responders can reach site personnel quickly. **Compliance with Safety Standards**: Meets regulatory requirements for emergency planning at demolition sites, avoiding potential fines or penalties.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				Promotes Safety Awareness: Reinforces a culture of safety on-site by encouraging all workers to be familiar with emergency procedures and designated safe zones. Establishing an EAP is essential to protect lives, streamline emergency actions, and enhance overall safety at demolition sites.
9)	SEI	8.1.1.2	Add-For electrical safety refer Part 8/Sec 2	
10)	SEI	8.1.1.5	For electrical safety regulation refer Part 8/sec 2	
11)	SEI	Table 2	Need to add Electrical and it cannot be left out, its one of the most important safety requirement and is also part of regulatory requirement. safety in most cases related or meant for civil construction part	
12)	SEI	8.9.4	Are these not repeatation, should it be part of building design or here	
13)	SEI	8.13	Again these seems to be repeatation, all these should be part of Building design and not here, better we keep at one place and refer when necessary, avoid duplication!	
14)	SEI	11.1.1	Add reference to NEC Part 3/section 5 or Part 8/Sec 2 of NBC	
15)	HGC	11.1.1 g) Electrical Safety	**Electrical connections and wires must be double insulated and connected to 30mA RCCB / ELCB**	At building constructions lot of temporary electrical connection used for power tools, equipment's etc, so electrical cables laying on wet surface may lead to electrocution hazard & risk of life to the personnel working around, as far as aluminum shuttering is

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				concerned this hazard is huge. Human skin may sustain current below 30mA, so every electrical connections must routed through 30mA circuit breaker (RCCB / ELCB) in case of electrical leakages
16)	HGC	11.1.1 Fall protection	**Provision of horizontal and vertical safety nets for building aluminum shuttering & conventional RCC works at height**	At construction project of multistory buildings most of the fatality cases happened due to fall of person from height or falling object hits to the person standing or working beneath of workplace. To protect personnel working on height above 12 meter from ground level horizontal safety nets are recommended & for aluminum shuttering activity vertical safety net screening of 02 level (Live floor & below floor) with MIVAN brackets is recommended
17)	HGC	11.1.1 Isolation form hazard	**Provision of hard barricading at slab leading edges, stairways, balconies, lift shafts openings, excavated areas leading edges to prevent incidental fall of person.**	At multistorey building construction project fatal incident happened due to fall of person from slab leading edges, fall in lift / elevator shaft, services cut out in slab, to protect those areas hard barricading protection is recommended.
18)	SEI	11.1.3.2	Add Electrical safety regulation 2023	
19)	HGC	Page No.-132 Clause No.- 11.7.2.10 11.12.1.2 11.12.4.3 11.7.1.1	A third-party inspection by a competent person on machinery and platforms at construction sites before taking them in use is an essential safety measure to ensure equipment and structures meet regulatory standards and are safe for use. Conducted by certified inspectors with expertise in construction safety, this inspection involves assessing machinery, scaffolding, lifting platforms, and other	**Ensures Compliance with Safety Regulations:** A third-party inspection by a qualified inspector helps the organization meet safety regulations, reducing the risk of legal penalties and promoting industry best practices. **Identifies and Mitigates Hazards:** Inspections conducted by certified

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
		Safety programmes Third-party inspection by a competent person on machinery and platforms	equipment for structural integrity, operational efficiency, and compliance with safety protocols. The process helps identify potential hazards, such as mechanical faults, structural weaknesses, or improper installations, allowing timely corrective actions. Regular third-party inspections reduce the risk of accidents, enhance site safety, ensure compliance with legal standards, and promote a safe working environment for construction personnel.	professionals identify issues like structural weaknesses, mechanical faults, or improper installations, allowing timely repairs before equipment is used on-site. **Reduces Accident Risks:** Early detection and correction of equipment and platform defects prevent accidents, ensuring worker safety and minimizing the potential for costly project delays. **Promotes Objective Assessments:** As an independent party, the third-party inspector provides an unbiased evaluation, offering a fresh perspective and identifying safety risks that might be overlooked by internal teams. **Enhances Worker Confidence:** Knowing that machinery and platforms have been inspected by a certified expert gives workers confidence in the safety of their environment, encouraging safe and productive work practices. **Extends Equipment Lifespan:** Regular inspections help maintain equipment in good condition, reducing wear and tear, prolonging service life, and optimizing

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				asset management. **Supports Continuous Safety Improvement:** Documentation and feedback from third-party inspections provide valuable insights for ongoing improvements in equipment maintenance, safety protocols, and operational efficiency. **Reduces Liability and Insurance Costs:** Ensuring that all equipment is safe and compliant minimizes the company's liability and can result in lower insurance premiums, as insurers often favor companies that prioritize safety inspections.
20)	HGC	11.10.1 Roofing	**Use of full body harness with rope grab fall arrester system with lifeline rope shown in below figure** 	Working on a dome shape or steep slope is a challenge and in adverse weather conditions it is so difficult without rope grab fall arrester, full body harness and adequate lifeline rope personal fall protection. Life threatening incidents are more likely to happen when personnel working on roof above 9 meter and above height, so it is thus recommended to have such personnel fall protection system for roofing work safety.
21)	HGC	11.14.3.1.1 Safety programme	**On all major works, an experienced and competent safety officer shall be placed under project in-charge of the work and shall be made responsible for the strict observance of**	Experienced & Qualified Safety officer as per Maharashtra Safety Officer Rules 1982, is required for major multistorey building

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
		General	**the safety rules.**	projects to ensure health & safety of personnel working. It is recommended above 100 plus workmen / staff 01 safety officer to be deployed.
22)	HGC	Page No.-163, 164 12.9.3, 5, 6 Protection to the Public Access Canopy	An access canopy is a temporary overhead structure installed at building demolition sites to provide a protected walkway for workers and the public. Its primary purpose is to shield individuals from falling debris, dust, and small materials that may dislodge during demolition activities. Typically made of sturdy materials like metal or reinforced scaffolding, an access canopy is built to withstand impacts, ensuring safety beneath.	**Protection from Falling Debris**: Shields workers, visitors, and pedestrians from hazardous falling debris, reducing the risk of injury. **Dust and Particle Control**: Helps minimize exposure to dust and small particles, improving air quality for those near the site. **Compliance with Safety Regulations**: Meets legal and regulatory requirements for public safety around demolition sites, preventing potential fines or penalties. **Maintaining Public Access**: Allows safe passage for people needing access around or through the site, ensuring minimal disruption to foot traffic and nearby businesses. **Enhanced Site Security**: Serves as a visible boundary that helps direct pedestrians to safe areas, discouraging unauthorized entry into demolition zones. **Positive Safety Image**: Demonstrates

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				the commitment to safety, reinforcing trust with the public, stakeholders, and regulatory bodies.
23)	HGC	Page No-166 12.11 Removal of Materials 12.11.2 Through Chutes	12.11.2.9 The chute should have **water sprinkler system** to control dust.	• When debris and small flying materials throwing into the debris chute which creates huge amounts of dust due to wind speed and impact. When we use water sprinkling system in the debris chutes at a particular place or floor, then we can control the dust suppression at the site.
24)	HGC	Page No-166 12.11 Removal of Materials 12.11.2 Through Chutes	12.11.2.10 **Rotational Water guns** should be arranged at the ground floor waste collection point to control dust.	• The ground floor debris collection area, which generates dust when the debris impacts the floor or metal bins, will be controlled using an additional water gun system that suppress a flying dust area of approximately 10 to 12 meters. And dust pollution can be controlled at work location.
25)	LTC	15.1.2.2	a) If the crack width is small (e.g., less than 10 mm), Removal of portions of cracked masonry walls and piers and rebuilding them in richer mortar. Use of non-shrinking mortar / Epoxy grouting will be preferable. b) If the cracks are relatively wide (e.g., more than	Restoration methods vary based on the width of cracks. Hence, it is required to specify methodology to crack width range.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			10 mm), Addition of reinforcing mesh on both faces of the cracked wall, holding it to the wall through spikes or bolts and then covering it, suitably, with cement mortar or micro-concrete (maximum size of aggregate limited to 6 mm or less as suitable) of appropriate fluidity, and may be with use of micro-reinforcement as fibre or ferro-cement. c) Injecting cement, polymer-cement mixture or epoxy materials, which are strong in tension, into the fine cracks in walls.	
26)	LTC	15.1.3	Increasing the lateral strength in one or both directions by increasing column and wall areas, reinforcement or the number of walls and columns.	CE&CR - "Assessment and Retrofitting of Buildings" by (Sumeet Agarwal, Head-Recovery, Sustainable Environment and Ecological Development Society, New Delhi) https://info.cecr.in/assessment-and-retrofitting-of-buildings/
27)	LTC	15.1.5.1	As a thumb rule, if the cost of repair and seismic strengthening is less than about ~~50 percent~~ 30 percent of the reconstruction cost, the retrofitting is adopted.	Reference: "As a thumb rule, if the cost of repair and seismic strengthening is less than about 30 percent of the reconstruction cost, the retrofitting is adopted." As per clause 4.5.1 of **IS 13935: 2009** (SEISMIC EVALUATION, REPAIR AND STRENGTHENING OF MASONRY BUILDINGS — GUIDELINES)
28)	HGC	Page No.-200 Clause No.-	A new construction worker induction is a critical safety briefing that ensures all new employees understand the site's health, safety, and operational	**Promotes Safety Awareness:** Ensures new workers are informed about potential hazards and safety requirements,

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
		16.5 Other Facilities New Workers Induction	guidelines. Key elements include an introduction to the company, site layout, and rules, as well as important safety policies. Workers are instructed on hazard identification, risk management, and proper use of personal protective equipment (PPE). Emergency procedures, such as evacuation routes, first aid, and fire safety, are also covered. Additionally, workers receive training on safe handling of tools and equipment, manual handling techniques, and scaffold safety if working at heights. Site security, access control, environmental protocols, and waste management procedures are explained as well. The induction concludes with a Q&A session to clarify any doubts, followed by signing a form to verify their understanding. This process helps new workers understand their roles in maintaining a safe and compliant work environment.	reducing the risk of accidents and injuries. **Compliance with Legal Requirements:** Meets health and safety regulations and standards, helping the organization avoid legal issues and fines. **Improves Operational Efficiency:** Educates workers on site layout, rules, and procedures, enabling them to work effectively and reducing the likelihood of disruptions. **Encourages Proper Use of Equipment:** Training on tools and PPE ensures workers understand correct usage, minimizing equipment damage and improving worker safety. **Facilitates Emergency Preparedness:** Familiarizes workers with emergency procedures (evacuation routes, first aid, fire safety), helping them respond quickly and safely in emergencies. **Reinforces Company Culture and Standards:** Introduces workers to the company's values and safety culture, fostering responsibility and teamwork on-

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				site. **Reduces Turnover and Absenteeism:** A structured induction creates a welcoming environment, making workers feel valued and supported, which can lead to higher job satisfaction. **Minimizes Environmental Impact:** Teaches workers proper waste management and environmental protocols, supporting the company's environmental policies. **Establishes Clear Expectations:** Sets expectations on conduct and responsibilities, helping prevent misunderstandings and potential safety violations. **Encourages Open Communication:** The Q&A session promotes open dialogue, allowing workers to clarify doubts, which fosters a culture of continuous learning and safety on-site.
29)	HGC	Page No.-198 16.8.2	Ambulance van on standby at a building demolition site is a critical safety measure to ensure prompt medical response in the event of an accident or emergency. Demolition work involves numerous	**Immediate Emergency Response**: Provides rapid access to medical care in case of accidents, reducing response time and potentially saving lives.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
		Ambulance van for medical emergencies	risks, such as falling debris, equipment-related injuries, or exposure to hazardous materials, which may require immediate medical attention.	**Enhanced Injury Management**: Equipped with essential medical supplies to handle common construction injuries (e.g., fractures, cuts, head trauma) on-site, ensuring stabilization before hospital transport if needed. **Risk Mitigation for High-Risk Activities**: Demolition work has a high risk of incidents due to heavy machinery, falling debris, and structural hazards, making an on-site ambulance crucial for worker safety. **Regulatory Compliance**: Often required by safety regulations for high-risk projects, ensuring that the site meets legal safety standards and avoids potential penalties. **Increased Worker Morale and Confidence**: Workers feel safer and more assured, knowing that medical help is immediately available if an emergency occurs. **Efficient Coordination During Emergencies**: Facilitates quick coordination between site supervisors

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				and emergency medical personnel, improving response outcomes.
30)	HGC	Page No.-198 Clause No.- 16.8.5 16.8 First Aid and Medical Facilities Pre-Medical Health Check-up	A pre-medical examination for construction workers is a crucial health assessment conducted before employment to ensure the worker is physically fit to handle the demands of the job. Construction work often involves strenuous physical tasks, exposure to harsh environments, and use of heavy machinery, making health and fitness essential for both worker safety and project efficiency.	**Ensures Worker Fitness:** Confirms that workers are physically capable of handling strenuous tasks, reducing the risk of injury on-site. **Enhances Workplace Safety:** Identifies health issues that could compromise safety, especially in environments with heavy machinery or hazardous materials. **Prevents Exacerbation of Pre-existing Conditions:** Detects medical conditions that could worsen due to construction work, allowing for necessary accommodations or role adjustments. **Reduces Absenteeism and Turnover:** Healthy workers are less likely to take sick leave or resign due to health complications, leading to more stable staffing. **Promotes Compliance with Regulations:** Helps the organization meet occupational health and safety standards, avoiding legal repercussions.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				Supports Early Intervention: Detects potential health risks early, allowing for timely treatment or management, which can improve worker well-being and productivity. **Increases Productivity:** Physically fit workers can perform tasks more efficiently, leading to higher productivity and fewer work delays. **Minimizes Workplace Liability:** By screening for health issues, the company reduces its liability for workplace accidents or health claims related to undetected medical conditions.
31)	HGC	Page No.-198 Clause No.- 16.9 Cooking Area Welfare of Building Workers Canteen	A canteen facility at a construction site provides workers with convenient access to nutritious meals and clean drinking water, essential for maintaining their health, energy, and productivity. Offering a designated area for eating and resting, a well-managed canteen promotes hygiene and prevents workers from eating in unsafe areas of the site. It may provide affordable, balanced meal options and cater to diverse dietary needs, which can improve worker satisfaction and reduce fatigue-related incidents. Additionally, having a canteen facility minimizes the	**Promotes Worker Health and Well-being:** A canteen facility provides workers with access to nutritious meals and clean drinking water, essential for maintaining their health and energy levels, which is critical for performing physically demanding tasks on construction sites. **Enhances Productivity:** Providing balanced meals helps reduce fatigue and boosts concentration, leading to improved focus and efficiency. Workers are more likely to perform at their best

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
		Facility at site	need for workers to leave the site during breaks, supporting better time management and fostering a supportive work environment.	when properly nourished. **Ensures Safety and Hygiene:** A designated eating area reduces the likelihood of workers eating in unsafe or unhygienic areas, minimizing the risk of foodborne illnesses or contamination that could occur in construction zones. **Reduces Absenteeism and Fatigue-Related Incidents:** Proper nutrition can prevent fatigue-related accidents, lowering the risk of injuries and minimizing lost time due to illness or exhaustion. **Time Efficiency:** Having a canteen on-site means workers don't need to leave the construction site during breaks, optimizing time management and reducing downtime, which improves project timelines. **Improves Worker Satisfaction and Morale:** Access to affordable and nutritious meals shows that the employer values the well-being of its workers, which can increase job satisfaction, foster loyalty, and reduce turnover.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				Supports a Positive Work Environment: A canteen facility creates a more supportive and inclusive environment, offering a space where workers can rest, socialize, and recharge, contributing to a stronger sense of community on-site. **Encourages Healthy Lifestyle Choices:** A well-managed canteen can offer a variety of healthy meal options, promoting better dietary habits and overall wellness among workers.

ANNEX 37

(Item 3.16.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT –

PART 8 BUILDING SERVICES/ SECTION 1 LIGHTING AND NATURAL VENTILATION CED 46:P12 - DOC: CED 46(26704)P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Shri Indrajit Neog, Engineers India Limited, New Delhi
2) Shri Prashanth N, Hiranandani Company Construction Private Limited, Mumbai

Further, the comments received are as follows: -

S. No.	Name of the Commenters	Abbreviation Used
1)	Ms Harleen Behl, Chief Architect, Delhi Development Authority	DDA
2)	Prof. Vinod Kumar Gupta, Space Design Consultants, New Delhi	SDC
3)	Shri Debdas Goswami, Schneider Electric India Private Limited, Gurugram	SEIPL

Comments:

Sl No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification for the Proposed Change
1)	SEIPL	Foreward Page 4	Members are requested to share their inputs/comments on the draft particularly w.r.t the changes listed above in the foreword; and specially on those text highlighted in yellow in this draft.	Most of the part on Lighting is covered well in National lighting code, which can be referred providing specific clause reference. Otherwise there will be duplication and confusion. Standard should be one at one place. The matter related to Building design and some coordination part with Architect should be kept, rest can be referred to NLC
2)	SDC	1.3	adequate ~~lighting and ventilation~~ for barrier free access and movement	The change does not read well as ventilation has little to do with barrier free access.
3)	DDA	Clause 1.3	Disability and of different age groups to be retained	Design should be focused on both children and elderly.
4)	DDA	Clause 2.1.20	To be renumbered after light shelf.	Alphabetically misplaced, position to be corrected.
5)	SDC	2.1.20	This section should not be added.	The code did not have mechanical ventilation except for fans. LECAVIR seems to add air conditioners and is using the terminologies that are normally used by air conditioning engineers. Before adding air conditioning, the use of exhaust fans for augmenting ventilation needs to be added. The augmented ventilation is a normal requirement of educational institutions and air conditioners are not the default option there. LECAVIR project is for homes where people install air conditioners anyway.

Sl No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification for the Proposed Change
6)	SDC	2.1.28	Should not be added.	The section 2 is for terminology used elsewhere in the code. Melanopic and D65 are not referred anywhere in the code.
7)	SDC	2.1.34	Should not be added	The section 2 is for terminology used elsewhere in the code. 'Photopic Lux' is not referred anywhere in the code.
8)	DDA	Clause 2.1.44 and 2.1.45	To be renumbered after utilization factor	Alphabetically misplaced, position to be corrected.
9)	DDA	Clause 3.1	Rephrased to 'The chief aim of Site Planning and Building Placement for optimum building orientation'	The title and corresponding clauses to reflect the same terminology
10)	DDA	Clause 3.2	Heading may be written as Climate Zones	Terminologies (basic and major climatic zones) used in heading and sub-clause are contradicting
11)	SDC	3.4.1.1	Which should be tested and adapted for local Indian conditions	This section is asking for solar exposure <250 and >1 hour. This is no methodology suggested for achieving this. It is also asking for testing without mentioning a testing protocol.
12)	SDC	3.6	shading effects from opposite facades and significant vegetation elements	The method of accounting for shading effects need to be added to the code.

Sl No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification for the Proposed Change
13)	SDC	3.8 b)	*UV-A and UV-B Balance*	This code is for practitioners and not for research. It does not distinguish between UV-A and UV-B, so they need not be mentioned here separately.
14)	DDA	Clause 4 Addition of New Clauses	Section dealing with Technology and Innovation may be added.	The clause may suggest use of technologies like intelligent building systems to streamline provision and energy conservation when dealing with lighting systems. It may also list out how use of latest technology may save energy and help in cost reduction for the same.
15)	DDA	Clause 4 Addition of New Clauses	Section dealing with Maintenance and Audit of Systems may be added.	While provision of good lighting is important for a building, it is equally essential that all the systems are maintained and scheduled audits take place to ensure effectiveness and energy efficiency of said systems.
16)	DDA	Clause 4.1.1	Second paragraph to be crossed off	Highlighted paragraph is replacing earlier text, and the second paragraph is repetition
17)	DDA	Clause 4.1.1.1	Add g) Ensure proper lighting in stairwells, ramps and fire egress to reduce risk of accidents	To support overall aim of ensuring occupant safety
18)	DDA	Clause 4.1.1.1	Add h) Ensure sustainability through use of energy efficient lighting systems.	Aims to include energy conservation in all aspects of building design.

Sl No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification for the Proposed Change
19)	SDC	4.1.2.1	Illuminance for working areas within a building should be at least 150 lux, or as per the average illuminance values recommended in Table 5, whichever is higher	This comment is not needed as it questions the validity of Table 5. That table has correct values already.
20)	DDA	Clause 4.1.5	Separate clause to be introduced for lighting in fire exits for emergency situations.	Emergency exits/ fire escapes to be governed by separate clauses.
21)	SEIPL	Page 22	**Table 5** Illuminance and Lighting Performance Parameters	All these are in details provided in National Lighting Code (NLC), it is better to refer that instead of creating another set of standard. NLC is already under revision and they are taking care with latest technology in lighting sector
22)	DDA	Clause 4.1.5.1 and 4.1.5.2	To be placed before 4.1.6, currently placed after 4.1.7	To be reordered as per serial number.
23)	DDA	Clause 4.1.5.1	To include following proposed clauses for lighting in corridors, passages and fire egress after introduction:	To support energy efficiency as well as innovation in good building design

Sl No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification for the Proposed Change
			1) Motion sensing lights to reduce energy usage for occasional use spaces 2) Types of lighting to be used may also include tread/ strip lighting to accentuate steps in dimly lit spaces	
24)	SDC	4.4.3 fig.4 Page 56		This table refers to fluorescent lights that are not used anymore. The table to be updated with LED lights.
25)	SEIPL	Page 59 (i)(ii)	**Table 9** Luminous Efficacy, Life, Lumen Maintenance and Colour Rendition of Light Sources	Many of these types of lamps have become obsolete, need to be removed. In general NLC provides more correct versions which can be referred
26)	SDC	4.4.6.2		Reference to Incandescent lighting needs to be replaced by florescent lighting.
27)	SDC	4.4.7	Ideal cleaning period of windows should be 3 months, during the dry season or if facade having extensive shading.	This contradicts the earlier recommendation. Only one recommendation should be there.
28)	DDA	Clause 4.4.8	To include following: 1) Photocontrol, along with supporting lighting based on influx of natural light, should	Occupancy base systems ensure control of energy wastage in lighting areas where building spaces are unoccupied at any given time of day.

Sl No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification for the Proposed Change
			have controls for intelligent 'occupancy based shut-off' system to control which areas need lighting at any moment. 2) The controls should maintain a decent standard of 'ease of use' for occupants as well as building staff	Other than being intelligent, technology should be easy to use for better and efficient handling of controls.
29)	SDC	4.5	Circadian Lighting	This is a complicated recommendation that cannot be implemented except in some esoteric conditions. What kind of lamps will allow this?
30)	SDC	4.5 (a)	Circadian Lighting	Circadian lighting needs to be incorporated ONLY in areas where the perception of daylight is missing and not in places where individual control is possible. It is needed in offices with very large floor plates and in basements. Again, this should not be part of the code as the effectiveness of Circadian lighting has not been demonstrated.
31)	SEIPL	4.5 (e)		Automatic control of lighting is necessary particularly for commercial building, not necessarily on light availability but also based on idle time of usage

Sl No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification for the Proposed Change
32)	DDA	Clause 5 Addition of New Clauses	Section dealing with technology and innovation may be added.	The clause may suggest use of technologies like intelligent building systems to streamline provision and energy conservation when dealing with ventilation systems. It may also list out how use of latest technology may save energy and help in cost reduction for the same.
33)	DDA	Clause 5 Addition of New Clauses	Section dealing with Maintenance and Audit of Systems may be added.	While provision of good ventilation is important for a building, it is equally essential that all the systems are maintained and scheduled audits take place to ensure effectiveness and energy efficiency of said systems.
34)	DDA	Clause 5.2 Addition of New Clauses	To add a clause on Ventilation and Wellbeing, and concept of 'Sick Building Syndrome'	Poor air quality in buildings sometimes manifests itself in the form of 'Sick Building Syndrome', dealing with contamination of air along with proper ventilation
35)	DDA	Clause 5.2 Addition of New Clauses	To add a clause on Air Filtration and how to deal with the same.	While ventilation or dilution with fresh outdoor air can help to reduce contaminant quantity within a space, it cannot eliminate the contamination entirely. Neither is ventilation effective when the incoming air itself is polluted. Today, we are battling with ever increasing pollen contamination, along with transfer of air-borne diseases. The same should be dealt with proper filtration techniques integrated with ventilation systems.

Sl No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification for the Proposed Change
36)	DDA	Clause 5.5	Aims of mechanical ventilation to include: 1) Avoiding uncontrolled losses 2) Demand/ occupant-based ventilation 3) Ensure 'ease of use' of systems	Occupancy base systems ensure control of energy wastage in lighting areas where building spaces are unoccupied at any given time of day. Other than being intelligent, technology should be easy to use for better and efficient handling of controls.
37)	SDC	5.7.5	Acceptable Air Temperature with the Increase in the Air Speed	This looks like content for a research paper that cannot be used easily by a practitioner/ designer. This is useful content for a research project. It uses terminology used by HVAC engineers and not in this code. Terms like **IMAC** and **clo** value are not for practitioners. The code should provide methods that will alleviate discomfort by augmenting ventilation in given situations of geography and climate. It does not help a practitioner to simply know the possibility of extending comfort hours with installation of different mechanical systems.
38)	SDC	5.7.6	Mixed Mode	It is a good idea to add the section on augmented natural ventilation. This would apply not only to residential buildings but also to educational buildings. However, the method of presenting this is like a research project. What is needed is the reverse in which the

Sl No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification for the Proposed Change
				ambient conditions are the given and the ventilation augmentation methods are the result. The addition of ASHRAE terminology is not useful for situations where air conditioning is not the default option. The addition of air conditioners should be avoided in this section.
39)	SDC	B-2.2	Irregular obstruction or obstructions not in a plane parallel to the window, diagrammatic methods, such as **Waldrams** diagrams	The method of using Waldram diagrams would be a very useful addition.

ANNEX 38

(Item 3.31.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT –

PRELIMINARY DRAFT NATIONAL BUILDING CODE OF INDIA PART 8 BUILDING SERVICES Section 2 Electrical and Allied Installations (Fourth Revision) – Doc: CED 46 (27026)P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Dr S. Senthilkumar, The Institution of Engineers (India), Kolkata

Further, the comments received are as follows:

Name of the Commentator/ Organization: _C.K.Varma, Former ADG, CPWD

Clause No. with **Para No.** or **Table No.** or **Figure No.** commented *(as applicable)*	**Type of comment – Technical OR Editorial**	**Abbreviation of the commentator**	**Comments/Modified Wordings**	**Justification for the Proposed Change**
1 Scope First line	Technical	CKV	This code……..for electrical installations in buildings which include generation of electricity from building roof and skin , extension within building premises for EV charging and communication installations…to ensure efficiency, safety from fire and shock , reliability and sustainability.	The scope should be extended to DC power generation from buildings, conversion to AC and Utilization of AC power for EV charging because of the gaining importance of Solar Rooftops, Building Integrated PV, EV Charging Stations in the premises of the building including energy management, ICT and automation. The second line may be

				deleted or modified accordingly.
2. Terminology and Conventional Symbols	Technical	CKV	Include few more terms due to their importance in allied installations like Grounding, Inverter, Protection Devices, Solar DC cable, UV Protection for solar installations, Off grid, On grid and hybrid etc.	Just to let people understand the difference between AC and DC cable, Inverter: Static Device to convert DC into AC and Protection Devices: Provided to protect people and installation from fire and safety, status of rooftop solar installations with the grid and so on …..
3.4 Power Factor Improvement in Consumer's Installation	Technical	CKV	Needs to be suitably modified if required to notify the use of power quality which includes power factor improvement etc.	An important section of previous NBC and should not be removed.
3.2 Streamlining Electrical Work	Technical	CKV	3.2.1 should also include prior to maintenance "Charging of the electrical Installation". 3.2.2 Coordination: Remove word "monitoring" from third sentence. 3.2.3: Substitute words "Monitor and maintain surveillance" by "Keep close observation".	For better comprehension.
4 PLANNING OF ELECTRICAL INSTALLATIONS	Technical	CKV	4.1 General: The word "functional" should be substituted by "Reliable" in the first sentence. 4.3 Architecture Planning Requirements: Remove from the first sentence "Electrical Contractor and Electrical Engineer on site".	4.1 It gives wrong impression from project management perspective. 4.3 These are the post tender arrangements in any construction project.

6 Wiring System	Technical	CKV	The corresponding clause of earlier NBC may be retained with improvements considering the safety, reliability and sustainability in Electrical Installations, the current practices, growing aspects of complexity of Electrical Installations, addition of Allied Installations etc.	The entire rewritten clause is not acceptable as it is not taking forward the provisions of NBC 2016 and the philosophy of safety, reliability and sustainability aspects of Electrical Installations in view of the present-day complexity of electrical system due to growing network of large number of smart and multistoried building stocks. In fact, it is a time to change to all copper conductor cables within the buildings for ensuring maximum safety to the assets and human beings using the building, considering the life cycle cost and recyclability of copper without losing its physical properties.
2.1.14 Note Below	Technical	CKV	Reference to IS16246:2015 may be changed to 17505:2021 along with temperature to 950 degree C from 750 degree C.	In view of corresponding upgradation in circuit integrity cable standards.
4.3.13, First para	Technical	CKV	Reference to ECSBC may be changed to Energy Conservation and Sustainability Requirements of Ministry of Power.	To be more generic. In fact, additional reference to NEC-2023, Chapter 8 would be more precise and noteworthy here.
4.3.13, First para	Technical	CKV	Classification of buildings under ECSBC may be removed.	Not relevant here and confusing due to other green building references.

4.3.14	Technical	CKV	The entire para needs to be rewritten in view of fire risk arising out of factors other than Li Batteries	This field is fast evolving along with regulatory frameworks. It will be prudent to include a futuristic brief roadmap as well.
4.3.14	Technical	CKV	In fact, a building typology should also be included to cater for the emerging requirements of EV Charging Stations in different types of Public Buildings.	For the safety of buildings from electrical fire within the premises.
7.3 Ceiling Fans	Technical	CKV	Nothing is talked about BLDC Fans here. At least a line can be mentioned if not a consolidated para.	BLDC Fans are used substantially because of low electricity consumption. Further this portion has been made very short , requires more insights in view of general circulation requirements integrated with building interiors.
8.1.2 Earthing	Technical	CKV	It is required that either a footnote be given or explanation of different class of equipment be included in the definition part.	While class of equipment are essential in adopting the system of earthing as has come out in this clause, there is no clarity about these classes.
10.4.2 c)	Technical	CKV	Type AC RCD's shall be avoided because of……..(…to be filled by the author)	Reason of avoidance should be provided to avoid any accidental mishap.
10.4.2 e)	Technical	CKV	Add "and recorded for future reference".	For making sure that the test was performed before putting the system into operation.

10.4.2 d)	Technical	CKV	Add "standalone/isolated" before ventilation.	Ventilation/Air conditioning should be isolated so as not to inject any fumes into the connected system.
10.4.5	Technical	CKV	The title says-Standby Generating Set (less than 5 kVA). This limit should be increased now in view of more gadgets.	Why the code is restricted to less than 5KVA? While sub point k) says cumulative capacity shall not exceed 10 KVA.
10.5 Building Management System	Technical	CKV	This part should be more elaborated as it is very important from the point of energy conservation.	There should be more information over NBC 2016 in view of more advancements as it is mostly an essential feature of all building electrically operated services.
10.6 Security System	Technical	CKV	This may include electrical fencing system. Or there may be a separate sub section within this section.	This system is already installed in so many highly secured defence buildings in the country.
10 Allied/Miscellaneous Services	Technical	CKV	Line below mentions "Requirements relating to various allied services shall be as per 10.1 to 10.9", but there is no 10.9.	Is it a mistake or something might be added at a later stage?
13 Protections For Safety From Electrical Hazards	Technical	CKV	In this version, there are 5 sub clauses namely general, Protection against electric shock, Protection against thermal effects, Protection against overcurrent and fault current and Protection against voltage disturbances and electromagnetic interference.	In the earlier version, there were 10. What is the reason to reduce the sub clauses? Are all points covered under these sub clauses? Is protection against multiple Electrical Sources, static electricity, arc flashing, loose connections, underwater installations like swimming pool etc. need not be covered, which are also common

				hazards in electrical installations?
14.2.4 first bullet point	Technical	CKV	Reference to IS:17298 may be inserted in the last sentence which specifies solar DC Cable.	This is to ensure use of appropriate Indian wiring standard in solar PV Installations.
14 Solar PV System	Technical	CKV	Reference to NEC 23 Part 8 and other indigenous standards should be included.	NEC 23 Part 8- Solar Photovoltaic (PV) Power Supply Systems covers all quality and safety aspects. Besides wherever IEC references are mentioned, those should be substituted by relevant IS Standards.
14.3.2.2	Technical	CKV	IP 44 protection for outdoor applications may be relooked.	IP 44 protection for outdoor applications seems inadequate, minimum recommended in NEC23 Part 8 is IP 65.
14.1 General	Technical	CKV	Grid dependent and grid interactive are not different in my view and hence should be mended. Please review.	Two terms have been used in the first sentence which have same meaning. In case author wants to say something different, these are open to correction anyway.
13.3 to 13.5	Technical	CKV	No solution has been provided in the description. Only principle of protection has been narrated. It is suggested to incorporate devices in the narration.	At least one or two protective devices could be mentioned here to provide a measure against the hazards arising out of mal function of electricity. It will be better if this clause is rewritten to include more information.

14 Solar PV System	Technical	CKV	This clause requires more information to make it more holistic and meaningful.	There is a need to rewrite the entire clause 14 with carefully drafted sub clauses in view of RTS and BIPV Systems gaining more importance in the present scenario and looking to the increasing threats from fire and electrical hazards. Afterall the revised code is going to stay for more than 5 years.
12.2.1 Fifth bullet point	Technical	CKV	Please correct the long form of EMI.	EMI and Electro Magnetic Environment do not match.
11.6.5	Technical	CKV	11.6.5.1 to 11.6.5.4 of earlier version are substituted by 2 lines under 11.6.5.1.	The author is to give justification of this substitution. At least one salient point under each heading could have been kept to maintain the continuity. This only proves that contents of earlier versions were extraneous.
11.6.5.2 Selection of SPD's	Technical	CKV	Earlier version contained 16 sub points under this broader sub clause, but present version only contains 6 points under this.	This shortening of the contents drastically needs justification from the author himself.
11.5.16	Technical	CKV	Like 11.5.19 provide fig. for 11.5.16 and 11.5.18 for better clarity. BTW (By the way) 11.5.17 is missing.	Rooftop owners to appreciate the LP system for these two applications. Also, system integrator should provide the lightning protection system properly.

11 Lightning Protection of Buildings	Technical	CKV	All left out contents from NBC 2016 should be deleted only after proper deliberation.	So that no important point is left of the previous version.

And from Shri Amol Kalsekar and Shri Gopa Kumar as in the Manak Online portal (to be included in this Annex)

ANNEX 39

(Item 3.19.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT – PART 8 BUILDING SERVICES SECTION 4 ACOUSTICS SOUND INSULATION AND NOISE CONTROL – DOC: CED 46 (26921) P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Dr S Senthilkumar, The Institution of Engineers (India), Kolkata

Further, the comments received are as follows: -

S. No.	Name of the Commenters	Abbreviation Used
1)	Shri Prashanth N, Hiranandani Company Construction Private Limited, Mumbai	HCCPL
2)	Shri K. K. Mitra, Lloyd Insulations India Limited, New Delhi	LLOYD
3)	Shri Rajeev Nanda, RITES Limited, Gurugram	RITES

Comments:

Sl No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification for the Proposed Change
1)	HCCPL	3/3.8.8	Noise barriers are subjected to	Please add "Wind loads,

Sl No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification for the Proposed Change
			these loads and hence to be added	movements due to vehicular movement, seismic loads"
2)	HCCPL	10/10.5	The code shall contain a paragraph on maintenance.	"It is the responsibility of the Owners to maintain the equipments in Industries in good condition to ensure that the equipments do not generate unwanted noises due to poor maintenance. Periodic Preventive Maintenance shall be carried out."
3)	LLOYD	Annex K Clause No. K 2.2	Add Sl. No. g – sound absorbing material	
4)	LLOYD	Annex K Clause No. K 2.3	Fibrous Sound absorbing Insulation material having minimum density of 100 Kg/m3 and non-combustible fire safe Insulation material should be applied on the source side of the barrier to reduce the buildup of sound pressure level. A layer of high density (2000 Kg/m3) elastic sound dampening membrane of 1.75 mm thick to be applied opposite to the source side (below the Fibrous Insulation) to reduce the impact of reflected noise.	
5)	RITES	Comment Received through mail rajeevnanda2005@yahoo.co.in	Kindly include the Acoustics, Sound Insulation and Noise Control systems for the proposed Redevlopment works of Railway	

Sl No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification for the Proposed Change
			stations. Like New Delhi Station redevlopment is being carried out as per Metro Stations, wherein all the 16 tracks /Platforms are under one roof and concourse like metro stations. Many more stations will be upgraded by Indian Railways. Similar type of works being taken up at Ahmedabad, Mumbai etc by Indian railways. Hence, In view of the above, structural/Air noise etc specs shall be deliberated/included in Building Code.	

ANNEX 40

(Item 3.20.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT –
PART 8 'BUILDING SERVICES/SECTION 5A 'LIFTS' - DOC: CED 46(26651)P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Shri Manokar S., Fujitec India Private Limited, Tamil Nadu
2) Dr. S Senthil Kumar, The Institution of Engineers (India), Kolkata
3) Dr. Senthilkumar Ganapathy, L&T Construction, Chennai

Further, the comments received are as follows: -

S. No.	Name of the Commenters	Abbreviation Used
1)	Dr. Preeti Jain Scientist F/TBRL, DRDO, Chandigarh	TBRL
2)	Shri Saket Kumar Pandey, Directorate General Factory Advice Service and Labour Institutes, Mumbai	DGFASLI
3)	DR. U.S. Chhillar, Director General, Institution of Fire Engineers (India)	IFE
4)	Shri Debdas Goswami, Schneider Electric India Private Limited, Gurugram	SEIPL Gurugram

Comments: -

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
1)	SEIPL Gurugram	FOREWORD Page 7		Most part of the text may have been taken from Indian Standard. To avoid duplication we may avoid copying all these texts which are already in the standard, simply refer IS no with clause no. However we need to keep those matter related to basic decision making process for building design, like identify capacity, type, design and location etc along with all important and critical matters related to safety which would require Important and particular attention and decision making. For details one can refer IS. That way it would be easy for building designer/Architect to focus on the points which they otherwise may miss referring through long text covering 200 pages
2)	SEIPL Gurugram	2.1	We may refer IS 14665-1 and avoid repeating here, additional definitions if any can be retained	
3)	IFE	2.1	Following may be inserted as	As per IS14665(Part 3/SEC 1),

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			2.1 Automatic Rescue Device – A device meant to bring a lift stuck between floors due to loss of power, to the nearest level in either direction and open the doors in order to allow trapped passengers to be evacuated. Such a device may use some form of internal auxiliary power source for such purpose, complying with all the safety requirements of the lift during normal run. The speed of travel is usually lower than the normal speed. On reaching the level, in case of manual door lifts, the device shall allow the door to be opened and in case of power operated door lifts the device shall automatically open the door. The Power Source/ Battery as being provided for the same should be capable to power the lift for minimum 10 rescue operation without recharging.	the power backup / battery capacity required for ARD is for minimum 3 operations without recharging .it creates trouble to commuters in the situation where frequent power outage happens and battery cannot be recharged in due course
4)	TBRL	2.2.1	A95 — Values of acceleration or vibration within defined boundaries or limits, in which 95 percent of found values are equal to or less than?	Definition seems to be incomplete. ? - Value needs to be specified for which found Values can be equal to or less than

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
5)	TBRL	2.2.1	V95 — Value of velocity, within defined boundaries or limits, in which 95 percent of found values are equal to or less than?	Definition seems to be incomplete. ? - Value needs to be specified for which found Values can be equal to or less than.
6)	SEIPL Gurugram	2.5.8	Authorized person for use (simply we can say User?) and for access to M/c space etc for maintenance would have complete different meaning, need to separate	
7)	DGFASLI	3 (3.1)	"3.1 Conformity with Lifts Act and Rules" may be modified as " 3.1 Conformity with statutory provisions applicable to Lifts prescribed by appropriate government"	Safety related statutory provisions related to lifts located at certain type of workplace are prescribed in various OSH statutes like the Factories Act, 1948 and rules framed thereunder, BOCW Act, 1996 and rules framed thereunder, OSH&WC, 2020 and rules / regulations framed thereunder etc. as well in addition Lifts Act & Rules prescribed by State Government.
8)	DGFASLI	3.1.1	"3.1.1 The installation shall generally be carried out in	Safety related statutory provisions related to lifts

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			conformity with Lifts Act and Rules wherever they are in force." may be modified as "3.1.1 The installation shall generally be carried out to confirm the statutory requirements prescribed by the appropriate government under relevant Acts & Rules framed thereunder, which are applicable to lifts."	located at certain type of workplace are prescribed in various OSH statutes like the Factories Act, 1948 and rules framed thereunder, BOCW Act, 1996 and rules framed thereunder, OSH&WC, 2020 and rules / regulations framed thereunder etc. as well in addition Lifts Act & Rules prescribed by State Government.
9)	DGFASLI	3.1.2	"3.1.2 It is the responsibility of the owner of the premises where the lift will be installed, to obtain necessary permission from the Authority before and after the installation of lifts and for subsequent operation of lifts." may be modified as "3.1.2 It is the responsibility of the owner of the premises where the lift will be installed, to obtain necessary permission from the appropriate authority as per applicable statute before and after the installation of lifts and for subsequent operation of lifts"	Safety related statutory provisions related to lifts located at certain type of workplace are prescribed in various OSH statutes like the Factories Act, 1948 and rules framed thereunder, BOCW Act, 1996 and rules framed thereunder, OSH&WC, 2020 and rules / regulations framed thereunder etc. as well in addition Lifts Act & Rules prescribed by State Government.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
10)	DGFASLI	3.1.3	"3.1.3 A license for public use is a safety provision, issued by state authorities under Lifts Act and Rules wherever they are in force, and shall be obtained as per the laid down statutory requirement." may be modified as "3.1.3 A license for public use is a safety provision, issued by appropriate authorities under relevant Acts & Rules framed thereunder prescribed by appropriate government, which are applicable to lifts"	Safety related statutory provisions related to lifts located at certain type of workplace are prescribed in various OSH statutes like the Factories Act, 1948 and rules framed thereunder, BOCW Act, 1996 and rules framed thereunder, OSH&WC, 2020 and rules / regulations framed thereunder etc. as well in addition Lifts Act & Rules prescribed by State Government.
11)	SEIPL Gurugram	3.2	Better refer to Electricity safety regulation 2023	
12)	SEIPL Gurugram	6.2 7th Line	Switchgear with protection device. Instead of owner, we may say "...it is ensured".	
13)	SEIPL Gurugram	6.2.1 (i)(ii) Page 83	It can lead to misuse and trapping of passenger, some kind of protection is necessary against unauthorized access	
14)	SEIPL	6.2.2	PVC should not be used,	

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
	Gurugram	2nd Line	Preferable Fire retardant cable, atleast FRLSH XLPE	
15)	SEIPL Gurugram	6.2.2 (a)(b)(c) Page 84	PVC cable not to be used, use FRLSH XLPE	
16)	SEIPL Gurugram	6.2.2 (cl 1) Page 84	It can be from emergency supply system, need clarification	
17)	SEIPL Gurugram	6.2.2 Page 86	This is not necessary as technical details of earthing are already part of NEC/IS 3043 which can be referred for detailed knowledge. Only anything specific to LIFT earthing may be in a para to be covered here.	
18)	SEIPL Gurugram	6.2.3.7	This cl and upto 6.2.3.12 should be retained and not DELETED as it is important safety requirements required to be ensured by designer of system	
19)	SEIPL Gurugram	6.2.3.10	We may add provision of AFDD (Arc fault detection device), a very effective device to detect arc in the whole of lift circuit could be due to loose connection/bad termination or	

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			for normal wear and tear	
20)	SEIPL Gurugram	7.1.1 (d)	All cable should be fire rated cable as per IS 17505	
21)	SEIPL Gurugram	8.2.2.3 (m) (1)	Operation Panel inside Cage should have color contrast with press button for floors so that indication of floors should be visible to person with a little lower vision. It is normally NOT provided and searching through which button press is a nightmare for many. In most cases light intensity is also not sufficient and as it falls vertically, glare develops.	
22)	IFE	8.4.5	8.4.5 Battery operated Automatic Rescue Device (ARD) shall be provided on all lifts to take lifts to the nearest possible landing in case of power failure, which includes power failure of one or more phases. For all lifts with ARD, an audio and visual indicator shall be provided inside the lift car to alert the persons trapped inside that they are being rescued. Capacity of batteries shall be such that minimum ten rescue	

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			operations can be performed without recharging. Emergency light and at least one fan inside the lift car shall be operational till the end of Rescue Operation. Levelling accuracy of + 40 mm or better shall be achieved in the ARD Operation. The ARD should operate only when all safety circuits are operational. The safety circuits shall be checked and verified continuously during the rescue operation.	
23)	SEIPL Gurugram	9.8 (a)	Should have audio communication/CCTV with lift cage available in control room,to facilitate if there is any problem	
24)	SEIPL Gurugram	10.2	We may refer to related IS for this	
25)	TBRL	16 Maintenance of Lifts	Operation, Maintenance and Risk assessment are important part of the document. It is requested to reconsider before deleting it.	Foreword and Scope also cover the requirements for planning, design, installation, operation, maintenance and inspection of lifts.
26)	SEIPL Gurugram	16 Maintenance of	But Maintenance is a very important aspect for lift in Building. We need	

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
		Lifts	to refer to the concerned IS for maintenance if available. Otherwise we should NOT delete, in fact we should examine to make it more appropriate and contemporary. There are many places above where maintenance in some para have been mentioned, we need to update	
27)	SEIPL Gurugram	The following Annexes B and C that were in NBC 2016 are proposed for deletion by the panel Page 190	See comments on Maintenance given above	

ANNEX 41

(Item 3.21.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT – PART 8 'BUILDING SERVICES/ SECTION 5B 'ESCALATORS AND MOVING WALKS'- DOC: CED 46(26227)P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Shri Amol C Kalsekar, International Copper Association, Mumbai
2) Shri Shirish Bhatt, Greenlam Industries, Kolkata
3) Smt Indu Siva Ranjani Gandhi, Indian Institute of Technology Guwahati, Guwahati
4) Shri Nitin Vaze, Sleek Boards Marketing Services LLP, Pune
5) Shri Vishv Ratan Bansal, Indian Building Congress, New Delhi
6) Dr. S. Parivallal, CSIR-Structural Engineering Research Centre, Chennai
7) Shri Senthilkumar Ganapathy, Larsen & Tourbro Ltd, Chennai
8) Shri P. Palani, Chief Electrical Inspectorate, Govt of Tamil Nadu, Chennai
9) Dr S Senthilkumar, The Institution of Engineers (India), Kolkata
10) Dr. S. Parivallal, CSIR - Structural Engineering Research Centre, Chennai

Further, the comments received are as follows: -

S. No.	Name of the commenters	Abbreviation Used
1)	Dr Shashank Bishnoi, Indian Institute of Technology Delhi, Delhi	IIT Delhi
2)	Shri Deepak Balani, TK Elevators (Thyssenkrupp), New Delhi	TK Elevators
3)	Dr S. Bhaskar, CSIR-Structural Engineering Research Centre, Chennai	CSIR–SERC
4)	Shri Shrihari Vispute, Otis Elevator Company (India) Limited, Bengaluru	OTIS

5)	Shri Vaibhav Singhal, Indian Institute of Technology Patna, Patna	IIT Patna
6)	Shri Saket Kumar Pandey, Directorate General Factory Advice Service and Labour Institutes, Mumbai	DGFASLI
7)	Shri U. P. Vijay, PAPL CORP	PAPL Corp
8)	Shri Sachin Agashe, TK Elevator India Private Ltd. District Pune, Maharashtra	TK Elevators Pune
9)	Shri Nitin Kadam, Schindler India Private Limited, Mumbai	Schindler India
10)	Shri Hemant M Sali, Public Works Department, Government of Maharashtra, Mumbai	PWD Mumbai
11)	Shri Manoj Kumar Kapil, DTSS Bangalore (An SIS Group Enterprises company)	DTSS

Comments: -

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
1)	IIT Delhi	1 N/A	asd	asd
2)	Schindler India	Foreword Paragraph 2, Line 2	This Section covers the requirements for installation of escalators and moving walks in buildings.	This section is pertaining to Escalators and Moving Walks. Hence the word Lifts must be removed.
3)	Schindler India	Foreword Paragraph 2, Line 4 & 5	The major changes in the first revision of 1983 were addition of outline dimensions of different types of escalators and moving walks in the buildings. Emphasis was laid on coordination between the engineer/architect and the	This section is pertaining to Escalators and Moving Walks. Hence the word Lifts must be removed.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			escalator/moving walk manufacturer to arrive at the number and position of escalators/moving walks for attaining optimum efficiency in serving the building with safety.	
4)	Schindler India	Foreword Paragraph 3	The significant changes with respect to escalators/moving walks incorporated in the last revision in 2016, includes addition of new clauses/recommendations for power supply requirements, usage, and type of protective devices for 1-Phase and 3-Phase circuits, fire protection requirements and updation of provisions as per the revised standards on escalators and moving walks on which this Section was based.	Reference of changes w.r.t. NBC 2005 must be removed and those relevant to NBC 2016 must be added. Hence complete paragraph must be replaced.
5)	Schindler India	Foreword Paragraph 4	Delete 4th paragraph	What was specified in NBC 2016 revision is not necessary to be mentioned now.
6)	Schindler India	Important Explanatory Note, Page 5 Paragraph 4	“give n” must be corrected to “given”	—
7)	Schindler India	Clause 2.1.2	Operational or Service Brake – Brake that usually acts on motor shaft and used to stop an escalators/moving walk under all normal conditions or under certain fault conditions.	Definition appears twice. Auxiliary or Emergency or Safety Brake is given in Clause 2.1.11. It should be retained in same clause.
8)	OTIS	2.1.11	Editorial	Duplicate & same as Clause

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
		one	2.1.11 Emergency Brake – Auxiliary mechanically automatically operated brake, which will stop a fully loaded escalator, if the drive chain break	2.1.2. Can be murged in to 2.1.2
9)	Schindler India	Clause 2.1.11	Auxiliary or Emergency or Safety Brake – Mechanically operated brake which operates automatically to stop a fully loaded escalator, if the drive chain breaks. It is typically situated on one side of the main drive shaft.	Definition as given in the draft must be taken.
10)	OTIS	2.1.15 Second Note	General 2.1.15 Escalator – Power-driven, inclined, continuous moving stairway used for raising or lowering persons in which the user carrying surface (for example, steps) remains horizontal. NOTE – Escalators are machines even when they are out of operation and should not be considered as fixed staircases.	Shall not be considered as fixed staircases
11)	Schindler India	Clause 2.1.15	NOTE – Escalators are machines even when they are out of operation and shall not be considered/used as fixed staircases	Word “should” is replaced by “shall”
12)	Schindler India	Clause 2.1.26	Must be deleted	Clause 2.1.2 already covers this definition

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
13)	Schindler India	Clause 3.2	All electrical work in connection with installation of escalators and moving walks shall be carried out in accordance with the provisions of The Indian Electricity Act: 2003, National Electricity Code of India SP 30: 2023, IS 732: 2019 and IS 3043: 2018 as amended up to date along with the rules and regulations framed thereunder and shall also comply with the other provisions of Part 8 'Building Services, Section 2 Electrical and Allied Installations' of the Code.	National Electricity Code of India SP 30: 2023, IS 732: 2019 and IS 3043: 2018 must be specified
14)	Schindler India	~~Clause 3.2, Line 3~~ 3.3	The installation shall best practices as in National Electricity Code SP:30, IS 732 and IS 3043.	NEC must added
15)	DTSS	3.7 Energy Efficiency and Sustainability	We should add following points - • Usage of high efficiency motors. • Usage of direct driven/direct couple drive to avoid the slippage loss.	This will help to improve the overall efficiency
16)	DTSS	3.7 Energy Efficiency and Sustainability Point A	We should remove the following line- • Another option is to reduce the speed to match the passenger demand, thus reducing energy consumption using variable voltage variable frequency (VVVF) drives, which provide very smooth, almost imperceptible speed transitions.	This will pose a safety as well as technical challenge as footfall varies without any predefined pattern.
17)	TK Elevators	Clause 3.7	Modified with addition:	Additional means for

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
	Pune	(c)	"Use of IE3 motors and helical gears can improve efficiency further."	improving Energy Efficiency
18)	TK Elevators Pune	Clause 3.7 (e)	Added: "e) Provision of Fall protection devices / barriers to avoid fall from escalator."	Additional means for improving Sustainability. (Additional information: This clause is also in discussion to be added to as mandatory equipment in European code for Escalators)
19)	CSIR–SERCSBK	5.1 Page 19	In Fig. 4 3C Walk Around shall be deleted	4C Walk Around already there
20)	PAPL Corp	6.3	Balustrade Additional Fall Protection	Additional fall protection requirement, apart from Balustrade need to be defined for escalators and Inclined travelators.
21)	PAPL Corp	6.3	Safety Announcements	Safety announcements for escalators and travelators at both landings to be provided for installations in airports, metros , bus stations , rail stations and other transport hubs.
22)	PAPL Corp	6.3	Truss Deflections	Truss deflections for types of

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				equipments and various applications to be defined
23)	PAPL Corp	6.4.7	Intermediate Support	Intermediate support requirement should be defined in terms of horizontal truss length rather than vertical rise
24)	OTISSVP	~~4.4.9~~ 6.4.9 one	Editorial 6.4.9 Sprinkler Piping An optional safety feature is the installation of a sprinkler piping within the escalator or moving walk (see Fig. 14).	add word - (For typical arrangement refer Fig. 14)
25)	TK Elevators Pune	6.4.9	Propose to Remove clause	Propose to remove clause
26)	TK Elevators Pune	Clause 6.5.2.1	Added paragraph: "Electrical power supply backup from UPS to be restricted to comb light, direction/traffic light and step gap light only. Further it is recommended to exclude provision of UPS from Escalator supplier's scope and provide supply from centralized UPS system of the building infrastructure to the extent possible. This will avoid generation of hazardous waste from the batteries of standalone escalator UPS."	Additional means for improving Sustainability.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
27)	PAPL Corp	6.5.3 page 33	MCCB/RCB to be provided but not mentioned the location for accessible distance and height.	MCCB/RCB must be near the unit within the distance of not more than 5 meters from the controller and should be visible. Unit nomenclature should be mentioned (Note : It must not be kept in separate lockable room since in case of Emergency, it cannot be Switched Off)
28)	TK Elevators Pune	Clause 7 (Fire Protection)	Added and removed content as marked below: To limit the danger caused by overheating, ventilation for the rooms / spaces that contain the motors and gears shall be provided. These areas may contain fire alarm systems, extinguishing systems, ~~and sprinkler heads if the equipment is adequately protected from incidental damage and does not create additional dangers for maintenance personnel to operate.~~ Use of sprinklers inside the escalator to extinguish internal fire should be avoided. It will further aggravate situation in case water is sprayed on fire caused from electric short circuit. ~~In case sprinklers are used, their integration and fixation into the escalator and moving walk shall be done by taking into consideration the special needs of the machine.~~	Proposal to remove sprinkler system

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			Accumulation of materials (such as grease, oil, dust, paper) represent a fire hazard. Therefore, it should be possible to clean the underside enclosure. ~~If such cleaning is not possible, other precautions (such as installation of sprinkler system) shall be provided to avoid the fire hazard.~~ Outer and inner decking, truss, pallets / steps, track system shall be according to Class 3 of 12777. In case of fire, upon receiving the signal, the escalator operation should stop immediately. It is recommended that as far as possible, escalators and moving walks are not used in case of emergency situations.	
29)	TK Elevators Pune	8.10	Added Paragraph: "It is recommended to avoid manufacturing processes such as chemical etching in stainless steel for obtaining deep grooves in comb plate and landing plate. Instead, comb plate and landing plate can be manufactured preferably from grooved Aluminum extrusion profiles or use punch stainless steel cover which will give depth of about 0.6mm."	Additional means for improving sustainability by avoiding environment destructing manufacturing process of chemical etching.
30)	PAPL Corp	8.14.2.1 page 41	Crocs shoe not allowed symbol to be added in the Safety signage Pictogram	**To create safety awareness.** Many instances of crocs getting stuck between the cleats and raiser and

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				accidents occurring.
31)	PAPL Corp	~~Not Mentioned~~	Wrong Entry Visual Display Indicator only provided Wrong entry buzzer to be provided at both Entry levels in all units.	**To Create Safety Awareness** Now a days most of the people are not concentrating on the displays. An audio warning will ensure safety.
32)	TK Elevators	9.1	Added wording- “Escalator”	Added wording- “Escalator”
33)	TK Elevators	9.1	Added wording- “Escalators and inclined Moving Walks”	Added wording- “Escalators and inclined Moving Walks”
34)	TK Elevators	9.3	Handrail guide is made of SS304 and not zinc plated in outdoor Escalators	Handrail guide is made of SS304 and not Zinc plated in outdoor escalators
35)	TK Elevators	9.3	(f) and (g) indicate the same chain protection cover Deleted (f) since the chain protection is only for drive chain which is already described in the next item (g) “Galvanized Steel Drive Chain Cover” The original statement results in ambiguity for selection of the fastener material. Escalator design cannot permit all fasteners made of Stainless steel	(f) and (g) indicate the same chain protection cover Deleted (f) since the chain protection is only for drive chain which is already described in the next item (g) “Galvanized Steel Drive Chain Cover” The original statement results in ambiguity for selection of the fastener material. Escalator design cannot

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				permit all fasteners made of Stainless steel
36)	TK Elevators	11.4	Added wording"(Mandatory only for Escalators) Added wording- "detection switch" Added wording- "Number of" Interpretation of (r) is not clear. Shall it be "landing plate (anti-slip material)"?	Added wording"(Mandatory only for Escalators) Added wording- "detection switch" Added wording- "Number of" Interpretation of (r) is not clear. Shall it be "landing plate (anti-slip material)"?
37)	DGFASLI	14.4 b)	Technical Sufficient breakage resistance of the parts directly driving the steps, pallets or the belt, e.g. step chains, racks may be established by submission of design calculation by manufacturer	"proof by calculation" may be replaced by "proof by design calculation"
38)	DGFASLI	14.4 c)	Technical Stopping distances for loaded moving walks together with adjustment data may be established by submission of design calculation by manufacturer	"calculation of the stopping distances" may be replaced by " design calculation of the stopping distances"
39)	Schindler India	Clause 15.1, Paragraph 3	Only if the tender specifies, the instructions for maintenance of an installation shall be provided	Requirement of tender and training is added so that this

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			by the manufacturer, when placed on the market, after necessary training and risk assessment.	requirement is not taken as standard requirement.
40)	PWD Mumbai	15.1 General Para 3	**(Comments/Modified Wordings Additions shown in Red)** The instructions for maintenance of an installation shall be provided by the manufacturer, when placed on the market, after risk assessment. Where the Maintenance Organization is other than the Installing manufacturer, the manufacturer shall provide all necessary help and supply spares at standardized rates. Non supply of any component for any reason based on intellectual rights shall not be allowed.	It is experienced that manufacturers do not cooperate when the maintenance contract is to be transferred to third party. Under the circumstances owner has to face dilemma and he is compelled to continue the contract with the manufacturer at the rates without any competition.
41)	PWD Mumbai	15.1 Para 5 / Or may be considered under 15.5.2	The installer/manufacturer shall provide maintenance instructions intended for the owner of the installation (*see* **15.3.2**) including the information intended for the maintenance organization (*see* **15.3.3**). There shall be proper handing over and taking over documentation between the owner and the manufacturer. It shall include service life of the components and the anticipated date of replacement. The checklists shall include	In comprehensive maintenance, it is part of service to replace certain components after service life is over. Very often this is not done/ prolonged. If there is any break in service contract or delay in renewing service contract, when owner desires to reinstate / renew the contract, suddenly in between

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			replacements done.	manufacturer / Maintenance Organization puts forward some conditions requiring replacement of some parts which usually have a high cost. The owner, completely a layman in technical matters is helpless under such situation. This is a ground reality. This issue sometimes leads to use the system for which there is no maintenance contract, involving risk. The suggestion given will be to put a check on the service provider.
42)	TK Elevators Pune	Annex B (Clause 6.4.9) Sr.No (v)	Propose to Remove clause	Impact of proposed sprinkler removal
43)	IIT PatnaVS	E-1.3 c)N/A	If possible the rate of application of load may be included for more uniform test results.	Addition of rate of loading.

ANNEX 42

(Item 3.22.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT –
PART 8 'BUILDING SERVICES/SECTION 5C 'PARKING SYSTEMS'- DOC: CED 46(26491)P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Shri Manokar S., Fujitec India Private Limited, Mahindra World City, Chengalpattu
2) Dr P R Kanna Rajumar, The Institution of Engineers (India), Kolkata
3) Dr S. K. Panigarhi, CSIR - Central Building Research Institute, Roorkee
4) Shri P M Tipnis, In Personal Capacity, Mumbai
5) Dr S Senthil kumar, The Institution of Engineers (India), Kolkata
6) Shri Senthilkumar Ganapathy, L&T Construction, Chennai

Further, the comments received are as follows: -

S. No.	Name of the commenters	Abbreviation Used
1)	Shri P. Palani, Chief Electrical Inspectorate, Govt of Tamil Nadu, Chennai	CEI
2)	Shri Srinivas Valluri, Synergy Infra Hyderabad	Synergy Infra
3)	Shri Chandra Shekher Mital, Former Chief Engineer (Elect) CPWD	CPWD
4)	Shri C.S. Kore, Schneider Electric, Mumbai	Schneider Electric

Comments: -

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
1)	CEI	Foreword Para 5	To encompass both hydraulic and mechanical transmission systems, we'll use the inclusive term **'power driven'** instead of 'hydraulic' in all references.	The growing demand for efficient and space-saving parking solutions for passenger cars in urban environments has led to the development of this new Subsection (5C) that addresses the requirements of ~~hydraulic lifts for multi-level car~~ **power driven vehicle** parking systems. These systems, which may be either automated or semi-automated, are crucial for optimizing land use in densely populated areas.
2)	CEI	1.1	To encompass both hydraulic and mechanical lifting systems, we'll use the inclusive term **'power driven'** instead of 'hydraulic' in all references.	1.1 This Code (Part 8/Subsection 5C) covers the requirements for planning, design, installation, operation, maintenance and inspection of ~~hydraulic lift~~ **permanently installed power driven vehicle** parking systems in buildings so as to ensure safe movement of cars with satisfactory performance.
3)	CEI	3.2	3.2 Conformity with the Indian Electricity Act and Rules 3.2.1 All electrical work related to the installation of parking systems shall be carried out in accordance with the provisions of the ~~Indian~~ Electricity Act, 2003 as amended up to date,	Editorial The correct title is 'The Electricity Act, 2003' instead of ' The Indian Electricity Act, 2003'

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			along with the rules and regulations framed thereunder. Additionally, the installation shall comply with the provisions of Part 8 'Building Services, Section 2 Electrical and Allied Installations' of the Code.	
4)	CPWD	4.1, Page 5 2nd and 3rd Line	The choice of a parking system should be based on factors such as the type of vehicles to be parked, the available space, the required capacity, and specific site conditions, **time taken in parking, Maintainability and economy**.	Time taken in parking, Maintainability and economy are quite important in deciding the choice of parking system.
5)	CPWD	4.2	Add: c) System may be Hydraulic or Electromechanical. Electromechanical system is preferred alike traction lifts.	It will clarify the choice to designers.
6)	CPWD	4.2.1, Page 5	Add: Electromechanical System: It is an alternate to Hydraulic system. Induction geared motor with inbuilt break system is provided. Power rating of the motor is decided to suit the car load. Manual Retrieval of the car is possible in case of power failure.	**Electromechanical System, is also required to be included.** Sch systems are better and long lasting. **Details/specs of such system may also be included.** We prefer to use Electrical traction lifts (as compared to Hydraulic lifts), Similarly Electromechanical System are better for stack parking.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
7)	CPWD	4.3	Add: While adopting Puzzle Parking System, waiting time for car parking and retrieval should always be considered. Waiting time should not exceed acceptable values.	Long waiting time in such time is frustrating.
8)	CPWD	5.2	Load capacity may be standardized as 3000 KG (instead of giving a range of 2000 to 3500 KG). Else two systems one for small cars (up-to 2000 KG) and other for bigger cars/SUV's (from 2001 to 3000 KG) may be considered.	Load capacity may be standardized as 3000 KG (instead of giving a range), as we are moving towards SUV's/bigger cars.
9)	CPWD	6.2.7	For curvatures and circular ramps or driveways, the inner radius shall be 5.0 m (if not more than 100 cars being served), 7.5.0 m (if not more than 1000 cars being served), 10.0 m (if more than 1000 cars being served) for safety purposes. Large garages (if more than 100 cars being served) shall have separate entry and exit points.	It is better to clearly specify
10)	CPWD	6.2.8	DELETE	Not practical to design and of not much use.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
11)	Schneider Electric	Fig 18 Page 24	1) The dimensions are in cm or m, these need to be in mm for aligning with the rest of the document. 2) Dimensions of turning radii do not match i.e. inner radius 3.5m outer radius 5.0m considering the track 2.5m. Suggest to include minimum in those to ensure clarity.	
12)	Schneider Electric	Fig. 20 Page 25	The contents are not legible.	
13)	CPWD	6.2.16	ADD: Parking slots shall be identified with numbers on Pillars or on the beams (size of font not less than 300 mm) to facilitate easy identification of parking slots. Numbering Scheme may be designed using Alphabets in One directions and numerals in other directions.	To facilitate identification of parking slot by user (irrespective of car parked or not) from a distance is very important.
14)	CPWD	ADD after 6.2.16	**Pillar/Column Corner Protector Guards**: Black and Yellow stripped Pillar guards made of suitable rubber shall be provided at four corners of each column in parking area. Yellow strip used shall be of photoluminescent.	This protects not only the cars but columns as well.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
15)	Synergy infra	6.2.20	At least two staircases or exit to the open air shall be provided from every point of a medium or large garage on each floor.	One staircase from an enclosed area is not safe.
16)	Synergy infra	6.2.21	The lighting shall be designed for at least 90minutes of operation with an illuminance of at least 10 lux or shall be provided with fluorescent markings that offer adequate illumination for at least 1 h, leading to exits in an easily recognizable manner.	As per present NBC, requirement is 90 minutes
17)	CEI	7.5 Para 1	**7.5 Wiring Practices** Wiring practices for power-driven parking equipment, including the connections to the disconnection means from the power supply, shall adhere to the guidelines outlined in Part 1 'General and Common Aspects'/ Section 9 'Wiring Installation' of the National Electrical Code of India 2023 **and IS 732. The electrical equipment of the parking system shall comply with the Indian Standard specification IS 16504: Part 1: 2019. The**	Technical Need to include important safety requirements

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			earthing and bonding connections shall be as per the code of practice specified in IS: 3043 and lightning protection of the parking system shall comply with IS/IEC 62305.	
18)	Synergy infra	8.1.3	Delete : “to which no other electrical systems shall be connected “	How can this be? Some where or other system is common. From where separate circuit is an issue.
19)	Synergy infra	8.4.1 & 8.4.3	8.4.1 Specifies fire extinguishing systems, smoke and heta extraction systems and Fire alarm systems to be provided as per Part 4	
20)	Synergy infra	8.4.3	8.4.3 To be deleted. New Clause : Compartmentation with Water/ Fire curtains to be done for an area incorporating not more than 200 cars.	Compartmentation requirements are not specified. As per present code, compartmentation shall be for ana rae of 3000sqm which may roughly include 200 cars
21)	Synergy infra	8.4.2 & 8.4.5	Delete : “Automated garages with more than 20 parking spaces shall be equipped with Sprinkler systems”	Since Clause 8.4.5 states that “A sprinkler system shall be installed in all parking garages regardless of Size (small. Medium or large)

ANNEX 43

(Item 3.23.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT –

PART 8 'BUILDING SERVICES SECTION 6 INFORMATION AND COMMUNICATION ENABLED INSTALLATIONS' - DOC: CED 46 (26914) P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Prashanth. N, Hiranandani Company Construction Private Limited, Mumbai
2) Dr S Senthilkumar, The Institution of Engineers (India), Kolkata
3) Shri Manokar S., Fujitec India Private Limited, Gurugram

Further, the comments received are as follows: -

S. No.	Name of the commenters	Abbreviation used
1)	T.V. Ramachandran, Broadband India Forum, New Delhi	BIF
2)	Shri Gopal Kumar S, Cape Electric Private Limited, Kancheepuram	CAPE
3)	Shri Suprateek Gulia, COAI, New Delhi	COAI
4)	Shri Tejpal Singh, Telecom Regulatory Authority of India, New Delhi	TRAI
5)	Shri Deval Sood, Bharti Airtel Limited, Gurugram	BAL

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
1)	TRAI	Para 1 of Forward (Page-3)	It also includes general requirements relating to installation of different wireless and wireline communication equipment,	Self explanatory
2)	TRAI	Para 3 of Forward (Page-3)	On the contrary, any wireless technologies, where antennas are to be installed at terrace along with a system which can distribute the signals through cables or inbuilding solutions, the flow of cables will be from top storeys of the building to the bottom.	Self explanatory
3)	TRAI	Para 4 of Forward (Page-4)	The building, the provisions are to be made for making the infrastructure supportive for multiple technologies/ products and ~~the requirements of~~ telecom service providers.	Self explanatory
4)	BIF	FOREWORD Page 4, Para 2 , 4th line from the top WiFi 6/6E or better, Cellular 4G/5G and beyond, FTTx,	Modified to " WiFi 6/6E/**7** or better , Cellular 4G/5G and beyond , FTTX ,	The wireless technologies referred to from both the streams viz. Cellular & WiFi must be at par with each other. While in case of Cellular we are referring to technologies which are present today viz. 4G & 5G, we are referring to 5G & Beyond. This is 5G -Advanced which is likely to be available not before First Half of 2027. Same should also apply in case of WiFi. Technologies available in the market today include WiFi 6, WiFi 6E and WiFI 7. When we refer to '

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				or better' we are referring to Next-gen WiFi technologies viz. WiFi 8 for which standards are being finalized and is likely to be ready in 2027/28 time frame.
5)	TRAI	Para 4 of Forward (Page-4)	Use of Building Management system (BMS) , access control, surveillances, and creation of 'Smart' building will require significant telecom infrastructure to be created within the buildings Which may be supported by M2M communication technologies	Self explanatory
6)	TRAI	Para 5 of Forward (Page-4)	Any other I -building solutions are also to be considered during the building planning stage itself and providing Shared access to telecom service providers on neutral host basis. The enabling infrastructure may include cable riser systems, conduits, cable trays, fiber management systems, passive and active infrastructure, DAS etc.	Self explanatory
7)	TRAI	Sub point :- Scope and Para 1 of	Their pathway components and passive required	The information will also be used by the Service Providers for installation of active components. So the scope may be amended

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
		NATIONAL BUILDING CODE OF INDIA (Page-7)	connectivity hardware considering future requirements. Including exablity requirement for installation of active infrastructure by the service providers.	accordingly.
8)	BIF	Page 7, Clause 2 - Terminology ,Sub-Clause 2.1 -Access Point , 3rd line from the top Connect them to a wired or wireless local area network (LAN)	This should be modified to read " Connect them to a wired or wireless local area network(LAN) **based on IEEE 802.11/ax/be specifications or better"**	Current specifications of Wireless LAN should be specified for easy reference for the installer
9)	TRAI	Sub point :- Terminology and Para 2.11 of NATIONAL BUILDING CODE OF INDIA (Page-8, 9) (ICT-DCT)	2.11 Distributed Anterna System- May be defined. 2.17 In Building – Solutions – May be Defined.	To bring clarity on the terms used in the draft Code.
10)	BIF	Page 10, Clause 2.37, 4th line from the top	Satellite communication Providers, **PM WANI service providers, or any other wireless service**	To provide good quality connectivity inside building, multiple connectivity solutions from various technologies are required viz. cellular, wifi, satcom and other wireless technologies which are authorized to be provided. Therefore, all Types of Telecom Wireless

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
		…. satellite communication providers.	**provider authorized by Department of Telecommunications (DoT), Ministry of Communications Government of India or its authorized entity.**	Service Providers, other than Telecom Service Providers(TSPs) and Satellite Communication providers, should also be mentioned. This should include PM WANI Service Providers or any other Wireless Service Providers, authorized by Department of Telecommunications(DoT), Ministry of Communications .
11)	BAL	3.1.1 h) 1)	A diesel generator (DG) set ~~may~~ must be considered if	
12)	BAL	3.1.1 h) 1)	~~One of the option is that individual TSP provide their own UPS. However, this may not be space and energy efficient~~	Provision of power supply and back-up should be responsibility of building owner
13)	TRAI	Sub point :- 3.1.2 Equipment Room (ER) and Para 3.1.2.1 (point c) of NATIONAL BUILDING CODE OF INDIA (Page-15)	C) Service providers' requirements:	To bring clarity on the terms used in the draft Code.
14)	TRAI	Sub point :- 3.1.2 Equipment Room (ER) and Para 3.1.2.2 (point a 2nd para) of	The minimum recommended size for ER is 14m2. Considering the requirement of forward and wireless system (IBS/DAS),	The proposed Size of the ER should be reviewed considering the installation of IBS/DAS requirement.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
		NATIONAL BUILDING CODE OF INDIA (Page-15)	the size of this space need revision upon and based an Upward based sample size of an actual deployment in addition, the provision for expansion of ER may also be mentioned for future upgradability.	
15)	TRAI	Sub point :- 3.1.3 Telecommunication Room (TR) and Para 3.1.3.1 of NATIONAL BUILDING CODE OF INDIA (Page-16)	TR or TE can also house active equipment, like LAN switches, routers, OLT, DAS etc.	
16)	TRAI	Sub point :- 3.1.3 Telecommunication Room (TR) and Para 3.1.3.2 of NATIONAL BUILDING CODE OF INDIA (Page-16)	Multiple rooms or TEs are required if the cable length between the horizontal cabling (floor distribution) [HC (FD)] and the word area outlet location, including slack, exceeds 90 m.	In case of non-fiberbased LAN may like to examine whether nonfiber-based LA should at all be considered under NBS for floor and inter-floor connectivity. It may be used only in localized areas like mouse, office etc. which is in hand of respective occupant.
17)	TRAI	Sub point :- 3.1.4 Entrance Facilities (EF) and Para 4 of NATIONAL BUILDING CODE	A Separate 230 V may not be mandated. On 16/6 a circuit with double outlets should be provided (for plugging in temporary test equipment or to power the	Self explanatory

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
		OF INDIA (Page-17)	tools) every 2.4 m along the EF and ER combined wall.	
18)	BAL	3.1.4 … 230 V and -48 V DC ,…..	Most of the equipment used by TSPs for IBS support DC. Hence specification should be given for both AC and DC voltage.	
19)	TRAI	Sub point :- 3.2.4.1 Telecom Media and Connecting Hardware and Point 3.2.4.1 of NATIONAL BUILDING CODE OF INDIA (Page-18)	Para 3.2.4.1 may be deleted from the proposed code	Self explanatory
20)	BIF	Page 22, Clause 3.2.5 (b) , 9th line from the top The access points are connected to the network as described in (a)	……as described in (a). **Public WiFi needs to be safe, secure, and trusted and thus a suitable protocol like PM-WANI may be deployed to provide access of internet to non-residents / occupants.**	Inclusion of Public WiFi is very important for communication within the Public spaces inside a gated colony and inside a residential multi-storeyed complex/building. PM-WANI, a popular, Govt approved, safe and secure technology is being suggested to be used at the Public WiFi hotspots to be created inside these buildings. TRAI has recently released Regulations namely **"Rating of Properties for Digital Connectivity Regulations, 2024** " to provide policy and regulatory impetus for addressing the issue of quality of digital connectivity inside buildings. The regulations are aimed to create an ecosystem for co-creation of Digital Connectivity Infrastructure (DCI) as a part of any development activity. Further, for enabling co-creation of DCI in Buildings or Areas, the Authority has recommended to include DCI development as a part of Model Building Byelaws and suggested a draft chapter titled “Digital Connectivity Infrastructure in the Buildings” covering requirement of DCI for new and

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				existing buildings. This assumes importance as majority of data consumption takes place indoors or in public premises whereas the quantum & speed of data consumption have seen exponential growth.
21)	BAL	3.2.5 c) Distributed antenna systems	Add “All passive equipments being used for DAS/IBS should have minimum PIM value of -150 dBc with good quality products i.e. – Antennas, Splitter, Couplers, connectors, Combiners, diplexers, triplexers, dummy loads, attenuators etc. For any new DAS/IBS, planning should be done considering 2T2R MIMO configuration & passive DAS should be 5G supported day1 itself (which supports frequency range from 400 Mhz to 4000 Mhz). DAS/IBS sectorization & capacity dimensioning should be calculated properly by using appropriate planning & designing tools considering minimum all RAN technologies with 2T2R	It is important to ensure that this equipment is purchased by the building owner as per the prescribed specs so as to ensure quality equipment and avoid network issues, sub-optimal signal. This is important to ensure plug and play.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
			MIMO configuration. Accordingly no. of ports should be made available at combiners of each sector for all operators."	
22)	TRAI	Sub point :- 3.2.5 Wireless Systems and Point c) of NATIONAL BUILDING CODE OF INDIA (Page-22)	The Active equipment, where required can be installed in ER/TR/TE, on which cables equipment, wherever required can be installed in ER/TR/TE, on which cables to/from DAS/IBS are connected. The DAS/IBS require RF planning to ensure seamless mobile coverage inside buildings. A single DAS can support all service providers at Optimum cost	Required for sharing of Digital Connectivity infrastructure.
23)	CAPE	4.1	Contents and wordings are from ANSI/TIA std, Requirements from ISO/IEC 30129 or references to ISO/IEC 30129 are to be given. There are changes w.r.t the IS codes such as IS3043: (draft 2024).	As per the forward of this section, only ISO, IEC, ITU, TEC, TRAI regulations and DOT orders/guidelines are to be used.

<table>
<tr><th>S. No.</th><th>Name of the commenter</th><th>Clause /Sub-clause / Para No.</th><th>Comments/ Suggestions/ Modified words</th><th>Justification of the Proposed Change</th></tr>
<tr><td></td><td></td><td></td><td>The comments and modified wordings are included as a proposal for the committee to consider.

Note: pl put appropriate figure no. The figure no and subject provided are copied from ISO/IEC 30129</td><td>

Annex C
(infomative)

Alternative terminology

Table C.1 shows alternatives to the terms used in this standard and defined in Clause 3. These alternatives are used in certain countries.

Table C.1 – Alternative terminology
<table>
<tr><th>Definition in Clause 3</th><th>Term in this ISO/IEC standard</th><th>Also known as</th></tr>
<tr><td>3.1.4</td><td>Backbone bonding conductor</td><td>Grounding equalizer</td></tr>
<tr><td>3.1.7</td><td>Equipment bonding conductor</td><td>Equipment grounding conductor</td></tr>
<tr><td>3.1.8</td><td>Main earthing terminal</td><td>Main grounding terminal</td></tr>
<tr><td>3.1.11</td><td>Primary bonding busbar</td><td>Telecommunications main grounding busbar</td></tr>
<tr><td>3.1.14</td><td>Rack bonding busbar</td><td>Rack grounding busbar</td></tr>
<tr><td>3.1.15</td><td>Secondary bonding busbar</td><td>Telecommunications grounding busbar</td></tr>
<tr><td>3.1.20</td><td>Telecommunications bonding conductor</td><td>Bonding conductor for telecommunications</td></tr>
</table>
</td></tr>
</table>

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
				ISO/IEC 30129:2015+AMD1:2019 CSV – 9 – © ISO/IEC 2019 **INFORMATION TECHNOLOGY –** **TELECOMMUNICATIONS BONDING NETWORKS FOR BUILDINGS AND OTHER STRUCTURES** **1 Scope** This International Standard specifies requirements and recommendations for the design and installation of connections (bonds) between various electrically conductive elements in buildings and other structures, during their construction or refurbishment, in which information technology (IT) and, more generally, telecommunications equipment is intended to be installed in order to a) minimise the risk to the correct function of that equipment and interconnecting cabling from electrical hazards, b) provide the telecommunications installation with a reliable signal reference – which may improve immunity from electromagnetic interference (EMI). The requirements of this International Standard are applicable to the buildings and other structures within premises addressed by ISO/IEC 14763-2 (e.g. residential, office, industrial and data centres) but information given in this International Standard may be of assistance for other types of buildings and structures. NOTE Telecommunications centres (operator buildings) are addressed by ITU-T K.27. This International Standard does not apply to power supply distribution of voltages over AC 1 000 V. Electromagnetic compatibility (EMC) requirements and safety requirements for power supply installation are outside the scope of this International Standard and are covered by other standards and regulations. However, information given in this International Standard may be of assistance in meeting the requirements of these standards and regulations.
24)	CAPE	4.1	Grounding to be changed to Earthing	Grounding is the word used in TIA/ANSI, (US term) Earthing is the word used in IEC, ISO, ITU, IS. Earthing is applicable to India
25)	CAPE	4.1	TMGB and TGB are terms used in ANSI/TIA to be changed to PBB and SBB of ISO/IEC 30129	As per the Forward of this section, only ISO, IEC, ITU, TEC, TRAI regulations and DOT orders/guidelines are to be used.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change
26)	CAPE	4.1	Requirement for MESH Bonding (Mesh-BN) is to be added. The resistance and inductance requirements are also to be added.	Mesh BN has been explained in ISO/IEC 30129, ITU-T K.27, ANSI/TIA 607. Resistance and Inductance requirement in ISO/IEC 30129 is to be achieved for ICTs bonding infrastructure to equalize potentials between metallic surfaces
27)	TRAI	Sub point :- A-5.2 Video Surveillance and Point A-5.2.2 END of NATIONAL BUILDING CODE OF INDIA (Page-49)	A-6- IBS/DAS -Details. For IBS/DAS may be incorporated.	Details and testing requirements of IBS/DAS may be incorporated in the Annexure to provide clarity to the stackholders.
28)	COAI	Annex B	Kindly refer to the attached file titled: **Experience on Street Furniture Challenges_COAI**	

CAPE comments:

4 SPECIFIC REQUIREMENTS FOR TELECOM INFRASTRUCTURE CABLING

4.1 Telecommunications Bonding

The telecommunication bonding infrastructure of a telecom installation is an essential part of an information technology system (ICT) design. They are an integral part of the signal or telecommunications cabling system that they support. In addition to protect personnel and equipment from hazardous voltages, a proper earthing arrangement may reduce electromagnetic interference (EMI) to and from the telecommunications cabling system. Improper earthing can induce voltages, which can disrupt other telecommunications circuits. Earthing and bonding shall meet the appropriate requirements and practices of ISO/IEC 30129. The earthing of the building shall be as per the National Electrical Code of India 2023.

The overall purpose for the ICT's bonding infrastructure is to equalize potentials between metallic surfaces predominantly in the event of lightning, a.c. electrical system faults, electromagnetic induction, or electrostatic discharge.

The Primary Bonding Busbar (PBB) serves as the dedicated extension of the building a.c. earthing system for the ICTs infrastructure. It serves as the central attachment point for the Telecom Bonding Backbone (TBB). A Secondary Bonding Busbar (SBB) is the earthing (grounding) connection point for ICTs infrastructure systems (for example, cabling, pathways) and ICTs equipment in the area served by an ER or TR. The PBB and SBB should be a pre-drilled copper bus bar with holes for use with standard-sized lugs. A SBB is a ICTs bonding conductor to connect equipment/TRs/TEs on multiple floors of a building with an ultimate connection to the PBB. Typical telecommunication earthing and bonding arrangement is shown in Fig. 7.

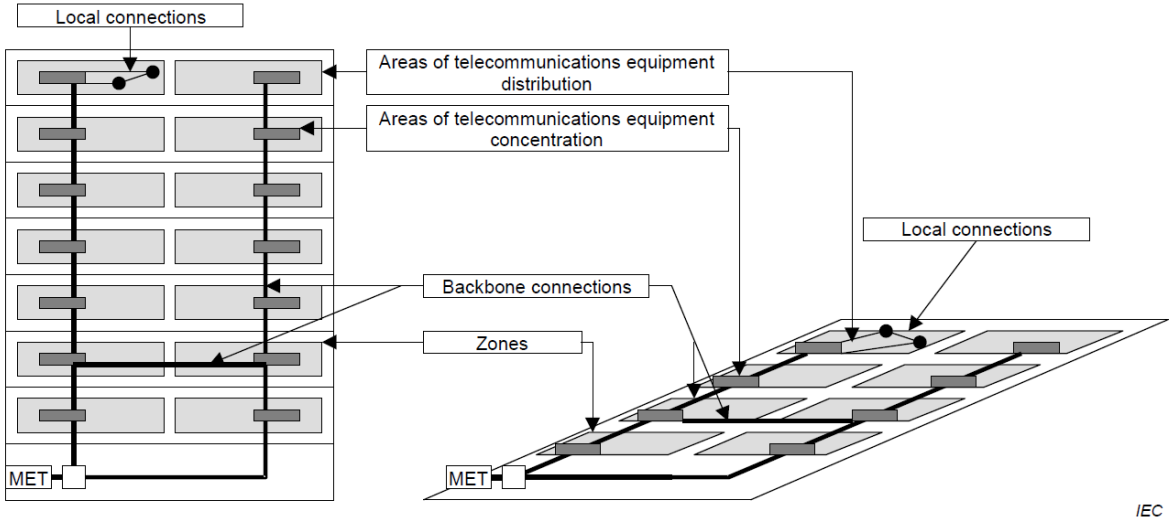


Figure 2 – Schematic of telecommunications equipment distribution and associated bonding connections

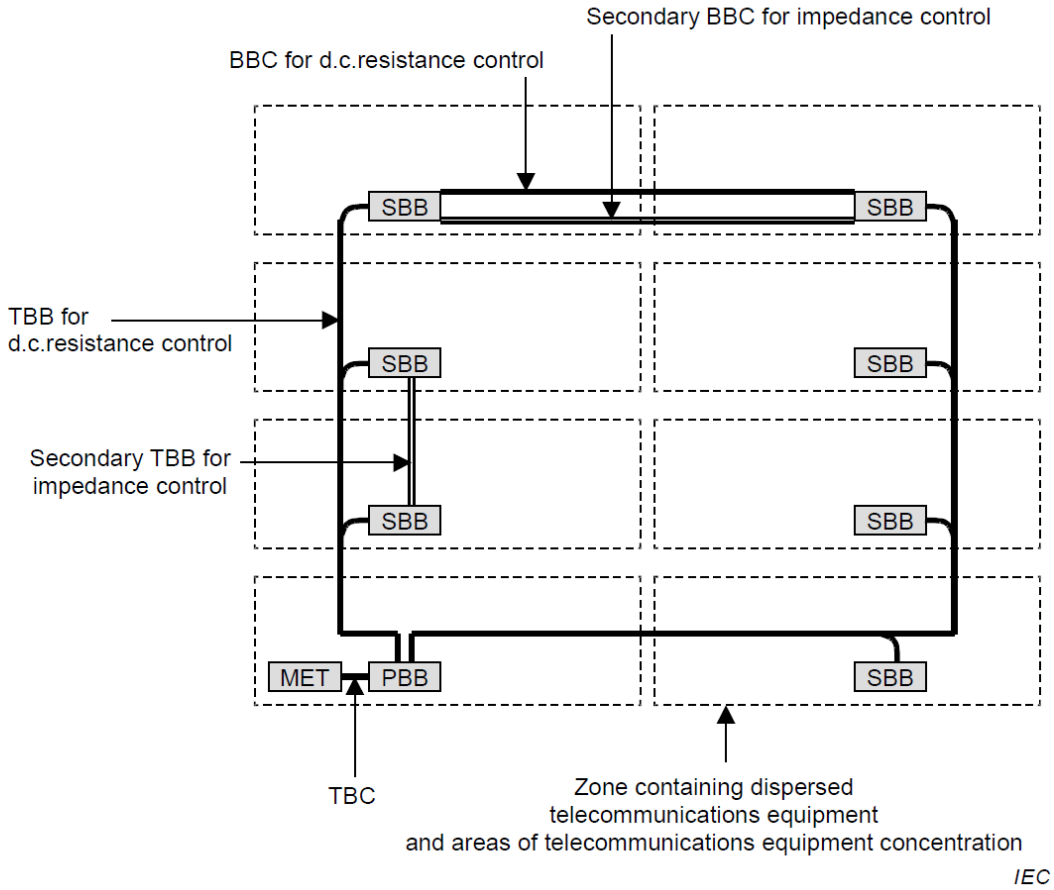


Figure 6 – Illustrative example of a large building

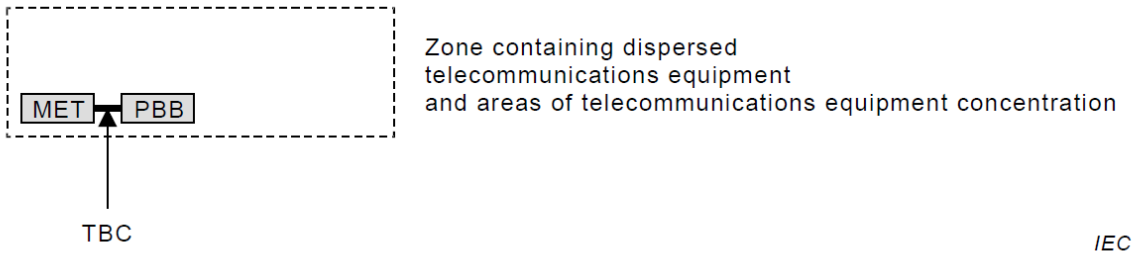


Figure 7 – Illustrative example of a smaller building

4.2 Meshed Bonded networks

The mesh bonded networks provide enhanced immunity to EMI compared to that provided by the other bonding networks. The objective is to provide:

a) a d.c. resistance between adjacent points of the grid created by the mesh of no more than 1 mΩ;
b) an inductance between adjacent points of the grid created by the mesh of no more than 6 μH.

This enhanced performance mitigates issues resulting from steady-state and transient voltages and currents generated by lightning, power systems, power circuit earth faults and EMI.

Mesh bonding networks shall be bonded to the protective earthing network within the building.

4.2.1 MESH-BN

The default topology as most ICT equipment has intra/inter intentional and unintentional metallic interconnections. A MESH-BN augments the protective bonding network by increasing the local density of conductors and functions by attempting to diversify and limit the radio frequency capture-loop area of the current paths such that the current density on any conductor or conductive loop is reduced to an acceptable level. The MESH-BN is a recommended practice since it simplifies installation procedures, most ICT equipment is powered by a.c. branch circuits, and most ITE employed for a computer room is suitable for placement directly into the protective earthing network. However, under certain circumstances such as a manufacturer's requirement or access provider recommendations, the ICT equipment may also be arranged into certain segregated "functional system blocks" of either MESH-BN, MESH-IBN or other form of bonding network within the same room. Figure 8 shows a simple illustration of a mesh BN and figure 9 shows a detailed illustration of Mesh BN. A merged MESH-BN and protective earthing network in buildings shall include the interconnections to the following installations,

a) "integrated lightning protection system" according to IEC 62305-4,
b) bonding measures of antenna installations (including satellite receiving equipment under private property) and cable networks according to series IEC 60728,
c) bonding measures of information technology cabling according to ISO/IEC 14763-2,
d) bonding in hazardous areas, e.g. according to IEC 60079-14.

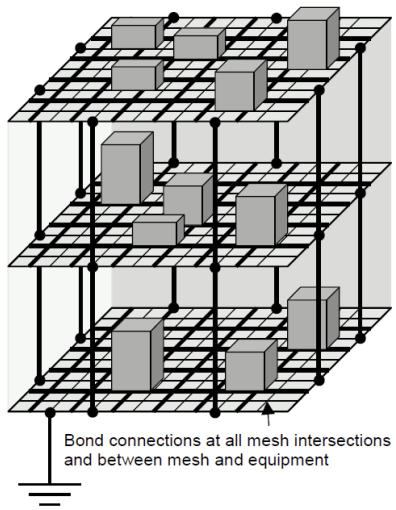


Figure x MESH-BN with equipment cabinets, frames, racks, CBN and global earthing bonded together.

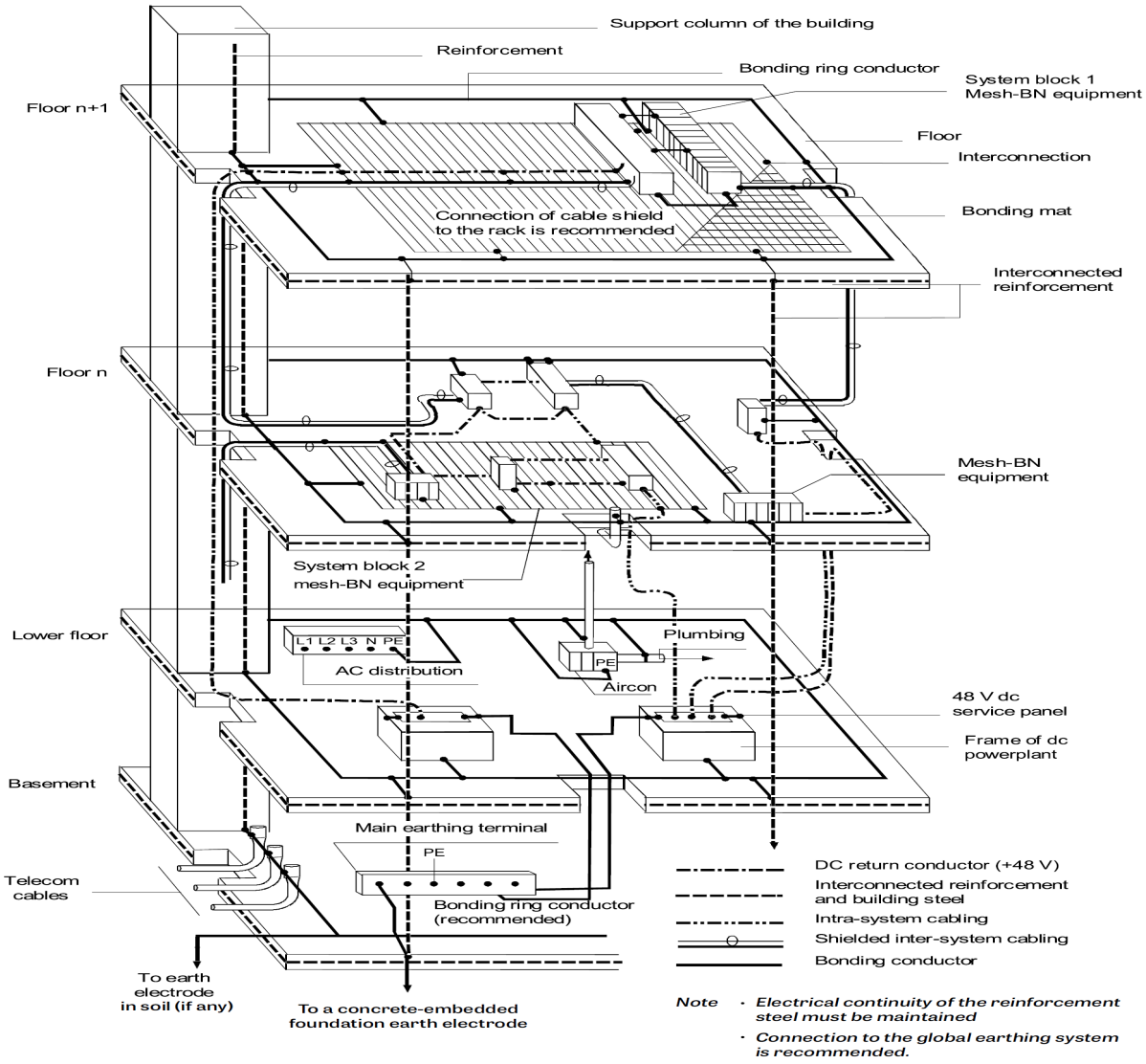


Figure x Mesh-BN installation inside a building

TRAI Comments:

New Provisions to be added in the proposed Draft:

<u>As per recommendation dated 20-02-2023 of TRAI following New Provisions may be added in the proposed Draft:</u>

S. No.	New Provisions to be Added	
1)	BIS should add the The actors to design, deploy and evaluate the DCI should include the Property Manager and DCI Professionals i.e., DCI Designer, DCI Engineer and DCI Evaluator, where: a) The Property Manager is the person or body who is responsible to oversee and manage the development, operation and maintenance of a Building and has the authority either as owner(s) of the Building or as an agent of the owner(s). The term "Property Manager" would include an owner or a developer or a builder of a real estate project(s) or an area(s) responsible to plan, design and build facilities like Multi-storey residential buildings, Commercial buildings or complexes, etc. b) DCI Designer is a professional who has the competence and possesses prescribed qualifications to design DCI for Buildings. c) DCI Engineer is a professional who has the competence and possesses prescribed qualifications to implement the DCI designed for Buildings. d) DCI Evaluator is a professional who has the competence and possesses prescribed qualifications to measure and evaluate the quality of the DCI deployed inside Buildings.	Pl. refer TRAI recommendations dated 29th Feb. 2023 on "Rating of Buildings or Areas for Digital Connectivity" (Copy attached)

2)	BIS is requested to incorporate standard in the NBC, Template to be used by Property Managers for collecting Building related information and connectivity requirements of users to be prescribed.	
3)	The templates prescribed for DCI by BIS to be made part of National Building Code.	
4)	BIS should consider different standards for different class of Buildings for DCI.	

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ANNEX 44

(Item 3.30.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT – REVISION OF NBC 2016 PART 11 'APPROACH TO SUSTAINABILITY' – DOC: CED 46(27025)P

No.	Basic Details	Clause/Subclause No.& Attachment	Paragraph No./Figure No./Table No.	Type of Comment	Comments/Suggestions along with Justification for the Proposed Change	Proposed Change/Modified Wordings	Action / Reply	
1	Name: S. Gopa Kumar Organisation: N/A Email: gk@capeindia.net Mobile: 9962522244 Comment ID #: CED_2024-12-011333	11.9 cmt_1733031131_674bf4db53eec.pdf	2	Technical	IS16996:2018 explains the energy efficiency in electrical installation. It included various new techniques to save electrical energy, which are followed globally.	The requirements for energy efficiency of electrical installations in buildings shall comply IS16996:2018, inorder to		
2	Name: S. Gopa Kumar Organisation: N/A Email: gk@capeindia.net Mobile: 9962522244	11.9 N/A	6	Technical	Some of the recommended design criterions that may be adopted are as follows: The contents are not accurate as per IS16996	The design, installation and verification criterions shall be according to IS16996:2018. Few examples are as below 1) Design shall consider the load energy profile (active and passive)		

	Comment ID #: CED_2024-12-018283				Add the recommendations as sl no 1 and 2 before the current contents from Sl no 1 to 28	2) The minimisation of energy losses in the electrical installation by means of optimal location of the HV/LV substation, local energy production source and switchboards (e.g. barycentre method) and reduction of loss in wiring (e.g. Use of class 1 / class 2 copper conductor instead of class 5 in fixed wiring).	
3	Name: Rajan Rawal Organisation: N/A Email: rajanrawal@cept.ac.in Mobile: 9825015779 Comment ID #: CED_2024-12-175969	Annex E cmt_1734439654_676172e65829a.pdf	pg 169, (a), line 2	Editorial	In the second line, the file name is mentioned as 'Emb_Energy_Carbon_Indian_Material_Contributor name_ddmmmyyy.xlsx', here the date format needs to be ddmmmyyyy - that is the appropriate date format.	change the file name to: 'Emb_Energy_Carbon_Indian_Material_Contributor name_ddmmmyyyy.xlsx'	
	Annex E cmt_1734439655_676172e667036.pdf		pg 169, (b), line 1	Editorial	in the first line, some information is missing. Following is the original text: "The column headers mentioned in table 29, 30, and table 32 to **Table**", where the table no. is not menitoned. Mentioning the correct table no., the text should read: "The column headers mentioned in table 29, 30, and table 32 to **Table 45**"	The text should read: "The column headers mentioned in table 29, 30, and table 32 to **Table 45**"	
	Annex E cmt_1734439656_676172e66f1a2.pdf		pg 185,	Editorial	for columns [H], [I] and [L01-L100], in the data entry row, there is an error showing	for columns [H], [I] and [L01-L100], in the data	

	table 30		"Error! Reference source not found". The respective table no has not been cross referenced appropriately. The relevant table to be cross referenced is Table 31.	entry row, the relevant table to be cross referenced is **Table 31**.
Annex E cmt_1734439657_676172e677924.pdf	pg 186, table 11	Editorial	the table no. seems to be wrong/ non chronological. it should be Table 31	the table should be renumbered to **Table 31**.
Annex E cmt_1734439658_676172e680ae9.pdf	pg 187, table 32	Editorial	in the description of column [P], the date format reads "dd-mmm-yyy" which is not correct. It must be "dd-mmm-yyyy"	the date format in column [P] must be "dd-mmm-yyyy"

ANNEX 45

(Item 3.31.1)

COMPILED COMMENTS RECEIVED ON THE PRELIMINARY DRAFT –

PART 12 'ASSET AND FACILITY MANAGEMENT' - DOC: CED 46(26829)P

Following organizations/members shared that they agree with the draft circulated and they have no comments on the draft:

1) Dr S. Senthilkumar, The Institution of Engineers (India), Kolkata
2) Shri Manokar S., Fujitec India Private Limited, Gurugram
3) Shri Shrihari Vispute, Otis Elevator Company (India) Limited, Bengaluru
4) Shri Prashanth N, Hiranandani Company Construction Private Limited, Mumbai

Further, the comments received are as follows: -

S. No.	Name of the commenters	Abbreviation used
1)	Shri Debdas Goswami, Schneider Electric India Pvt Ltd, Gurugram	SEI
2)	Shri S. P. Singh, Indian Building Congress, New Delhi	IBC
3)	Shri R. C. Sharma, In Personal Capacity, New Delhi	RS

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change	Recommendations of Working Groups
1)	RS	Scope 1.1	The Words "Including Fire Safety related facilities" needs to be added after Building	The Word "Asset "does not automatically include Fire Safety	After careful deliberation, it was decided that the scope

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change	Recommendations of Working Groups
			services.	related Facilities. These are mostly taken as liabilities. Hence this needs to be added in definition or at other suitable places as well.	should cover only the objective in brief, as the contents have a separate clause for this. The members reached a consensus that this comment need not be agreed to. Additionally, while reviewing this comment, members suggested changing the title of Clause 15 for better understanding.
2)	RS	2.7 Asset Type	The Fire safety related asset group should be added	If not included here, it cannot be taken as an automatic inclusion.	After careful deliberation, it was decided that fire safety is an integral part of physical assets in a building. The members reached a consensus that this change is not necessary. Additionally, while reviewing, the members suggested revisiting the terminology once again.
3)	RS	2.83 Secondary Storage	Add “and Fire Hazard”	Important area of precaution.	After deliberation, it was decided to agree to the comment.
4)	RS	3.1 Asset and its Management	After Financial add “Safety related Assets”	Looks necessary, for information of all concerned. **The 4th Para of 3.3 -Overview of Asset/Facility Management “**If correctly implemented, facility management can deliver **safe**, productive, humane and cost effective……” includes the word Safe.	After careful deliberation, it was decided that since all parts of assets are covered under tangible and intangible assets, the members reached a consensus that this comment need not be agreed to.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change	Recommendations of Working Groups
5)	RS	9.12.1 Responsibility	Add after word control, “and report if they see anything abnormal on these issues”	The vigilant occupants should also report things concerning abnormality at any place	After careful deliberation, it was decided that since the reporting authority is properly defined, the members reached a consensus that this comment need not be agreed to.
6)	SEI	9.13.2 Part C	Annual maintenance contracts (AMC) for equipment and systems installed in the common areas, including repairs and servicing of lifts, security systems, fire safety equipment, E&M equipment like electric panels, DG sets, transformers, lightning protection system, earthing system, etc.	Electrical and Mechanical equipment are the most critical in any facility and usually placed in common areas. Electrical Panels and DG are the main source of power for any facilityso periodic maintenance and AMC should be made compulsory to avoid any failures	After careful deliberation, it was decided to include AMC for critical equipment to ensure the health and functionality of the equipment remains safe and sound.
7)	RS	12 Maintenance of Heating, Ventilation and Air Conditioning (HVAC) Systems	*Para 12.1 includes* d) smoke extraction system; and e) fire dampers. but doesn’t include its testing procedure. I don’t think we are designing the HVAC for functioning as smoke venting System.	*I don’t think the HVAC system is also designed to take care of smoke venting in all cases.* *The HVAC can and should be certainly designed to act as a smoke venting system as well, but is it being done at present?* *The para d & e need to be deleted or the process of their testing be included in this as for other functions.*	After careful deliberation, it was decided that since the clause mentions only the maintenance of HVAC, the members reached a consensus that this comment need not be agreed to.
8)	SEI	12.5	Operation of the system should be done by first switching on the indoor unit fan, and then the condensing unit. Normally most modern packaged and ductable split units have an inbuilt sequencing and only an on/off switch needs to be operated. In order to save energy consumption and to	This shall help to improve the energy efficiency and reduce overall stress on HVAC equipment	After careful deliberation, the members pointed out that this does not necessarily require an auto switch. Thus, they reached a consensus that this addition is not required.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change	Recommendations of Working Groups
			prevent discomfort to occupants, it is advisable to set the temperature in accordance with Part 8 'Building Services', Section 3 'Air Conditioning, Heating and Mechanical Ventilation' of the Code. It is advisable to switch on the HVAC units a little before facility/office starts working to lower the indoor temperature for achieving comfort levels. Provision to auto switch off the HVAC if there is less people or facility closed		
9)	SEI	12.10	An Energy Management System (EMS) should be integrated with HVAC systems to provide real-time data on energy consumption and performance metrics. The EMS can continuously monitor energy usage, detect inefficiencies, and optimize system operations to reduce energy waste. Additionally, it enables the automation of alerts for abnormal conditions such as excessive energy consumption or equipment malfunctions, allowing for timely intervention and maintenance. The EMS should also be configured with simple yet effective monitoring tools and alert mechanisms. These tools can generate automated reports and performance trends, providing facility managers with insights into HVAC performance and areas for improvement. The alert system can notify operators when predefined thresholds are exceeded, ensuring prompt action to	This shall support to generate reports which are required complying to energy audits and as per IGBC requirement. Also third party cyber security shall ensure that the software system is free from any malware and data is encrypted.	After careful deliberation, it was noted that there is no major requirement for the ISO and IEC standards suggested in this comment for every type of building, as NBC covers various types of buildings. Therefore, the members reached a consensus that this comment need not be agreed to. Additionally, it was suggested that this may be put in as an option.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change	Recommendations of Working Groups
			maintain efficiency. By integrating EMS with HVAC systems, facilities can effectively monitor energy consumption, optimize performance, and respond quickly to potential issues, ultimately reducing energy use and improving overall system efficiency. **Energy Management System complying to ISO 50001 , 50002 & 50006 and be Cyber Secure as per IEC 62443-4-1 & IEC 62443-4-2**		
10)	SEI	13.1	Electrical installations in building have to be installed and constantly maintained in proper working condition to ensure efficient use of electricity including safety from fire and shock. Electrical system maintenance is very important as it also helps in ensuring smooth operation of all plants and equipment. The coverage is limited to maintenance of internal electrical installations starting from receiving of electric supply within premises. It covers HV panels, HV switches, transformers, LV panels, floor panels, earthing, internal electrical distribution systems(Cables or bus trunking System), light fixtures/switches/MCBs, lighting arrestors, street lighting systems, facade lighting and transformers.		After careful deliberation, it was decided that since cables and the bus trunking system are already covered under internal electrical distribution systems, the members reached a consensus that this change is not required.
11)	SEI	13.3.1 a)	All transformers shall be provided with a	Predictive maintenance system will	After careful deliberation, it

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change	Recommendations of Working Groups
			linked switch with fuse or circuit breaker of adequate capacity. These should be checked annually to ensure the safety of the transformers. Where oil type transformers are used, timely de-hydration of oil and topping up shall be done to ensure proper functioning. Condition based monitoring Sensor based online transformer monitoring solution should be used for critical transformer fleet.	help in continuous monitoring thereby help to mitigate electrical failure risks and avoid unplanned downtime.	was decided to review this comment and include this provision accordingly.
12)	RS	**13.3.3** *Maintenance of Battery*	*Include the procedure for Lithium Ion batteries as well at appropriate places.*	*These batteries constitute a special Fire hazard, hence this is needed.*	After careful deliberation, it was decided to agree to the comment and include energy storage systems (ESS), including Li-ion batteries, in clause 13.3.3.
13)	RS	**15.4** Similarly smoke extraction fans, fire dampers in HVAC systems shall be tested periodically	*This does not talk about smoke venting ducts provided in lower basements.*	*The total clause need to be amended suitably after discussing the operational requirements of the smoke venting system.*	After careful deliberation, the members pointed out that since Part 4 of NBC may be mentioned, they reached a consensus that Part 4 should be mentioned in 15.4, and thus the comment need not be agreed to. Additionally, it was suggested to change 'tested periodically' to 'tested accordingly'.
14)	RS	**17.1.5** *Use of PPE for Specific Areas*	*We need to include PPEs for Firefighting team, if provided in the Building*	*The PPEs are necessary for the Fire staff as well.*	After careful deliberation, the members reached a consensus to review 17.1.5.
15)	RS	**21.3.4.5.6**		We are discussing design & other ways to improve the properties etc.,	After careful deliberation, the members decided to agree to

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change	Recommendations of Working Groups
		Glazing c		which is not connected to asset / facility management…. May be deleted.	the comment.
16)	RS	21.3.4.5.11		**"***Lift lobby level access turnstiles or panel gates" may be deleted as not being relevant.*	After careful deliberation, the members decided to agree to the comment.
17)	RS	**22.1 Principles**	Add para e) Prevention/ Reduction of Fire Hazard		After careful deliberation, the members pointed out that if points a to d are followed, there is necessarily no requirement for the suggested point e. Thus, they reached a consensus that this comment need not be agreed to.
18)	SEI	23.2 j)	Energy Management System shall also be used complimenting to the BMS system	As mentioned in part 12.10 Energy Moniitoring system should be integrated with HVAC/BMS system. **Energy Management System complying to ISO 50001 , 50002 & 50006 and be Cyber Secure as per IEC 62443-4-1 & IEC 62443-4-2 which shall support IGBC and other green building criteria**	After careful deliberation, the members pointed out that this is not necessarily required. Thus, they reached a consensus that this comment need not be agreed to.
19)	SEI	23.3.1 c)	Sub Tenant Energy billing should be responsibility of Facility Manager. Meters having accuracy class 0.5 as per IEC 61557-12	Tenant energy meters should be accurate to ensure proper billing and record of energy used	After careful deliberation, it was decided that after reviewing the clause, the members reached a consensus that the facility manager should not be held responsible for this, and thus, this comment need not be

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change	Recommendations of Working Groups
					agreed to. Additionally, the members suggested reviewing this comment once again later.
20)	SEI	Annexure E E-14	Switchboards, non-forced air ventilated, shall be enabled with a DIN rail wireless sensor capable of monitoring the system and generate three-levels of alerts on overheating wire connections or overheating cables depending on the severity of the detected situation.	As mentioned in E-14, Overheating is the major cause of Failure in Electrical equipment. The Thermal Sensors will detect any abnormal overheating generating alerts beforehand thereby avoiding electrical mishaps	After careful deliberation, it was noted that overheating is already covered. Additionally, members suggested that the rail wireless sensor may become redundant in the future. Thus, the members reached a consensus that this comment need not be agreed to.
21)	SEI	List of Standards	• IEC 61439-1/2 Low voltage switchgear & controlgear assemblies – Part 2 Power switchgear and controlgear assemblies • IEC60044-1 Current transformers • IEC60186 Voltage transformers • IEC60529 Degrees of protection provided by enclosures • IEC60947-2 Low voltage switchgear & controlgear – part 2 Circuit breakers • IEC60947-3 Low voltage switchgear & controlgear – Part 3 Switches, disconnectors, switch-disconnectors & fuse combination units • IEC61140 Protection against electric shock – Common aspects for installation and equipment – Basic safety publication	All the latest and relevant standards for Electrical Equipment safety and compliance	After careful deliberation, it was decided that since these standards pertain to Electrical Equipment safety and compliance, they may be referred to CED 46:P13 to be covered in Part 8, Section 2. Thus, the members reached a consensus that this comment need not be agreed to.

S. No.	Name of the commenter	Clause /Sub-clause / Para No.	Comments/ Suggestions/ Modified words	Justification of the Proposed Change	Recommendations of Working Groups
			• IEC60 947-4-1 Contactors and motor starters IS 8828: Electrical Accessories -Circuit Breakers for Over Current Protection for Household and Similar Installations IS 1180 Part 1(2021): Outdoor Type Oil Immersed Distribution Transformers Up to and including 2500kVA, 33kV Specification IS: 16636: Automatic Power Factor Correction (APFC panels for voltage rating up to and including 1000V) IEC 62271-100/200 : Specification for High Voltage Switches for rated voltage above 1kV and less than 52kV (First Revision)		

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